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CURSORY OBSERVATIONS *on the SOIL, CLIMATE, and DISEASES of the State of GEORGIA.* By Dr. JOSHUA E. WHITE, of Savannah.

Introduction.

IN submitting the subsequent observations to the inspection of the public, I do it apart from all other motives except such as originate from a wish to contribute in some degree, however small, to that mass of information which fills the valuable pages of the Medical Repository. They were at first designed for that publication, but since the formation of the Medical Society in this place, they have been read at one of its meetings.

I am fully confident of the very imperfect manner in which the several subjects comprised in the following sheets are discussed; but from being the first attempt of the kind, and for reasons which will be assigned, I trust they will be viewed in a candid and liberal manner; not by the rules of severe or harsh criticism. I have not the vain wish to be enrolled in the list of authors, but to fulfil the primary end of our creation; that is, to be useful.

These observations were drawn up nearly two years ago, at a period, and in a situation when various avocations (the incidents of a country practice) unavoidably produced very frequent interruptions, and left but little time for that reflection which was essential. With the addition of a few notes they are now offered to the public. I lament that various circumstances precluded more accurate information upon several topics, particularly that relating to the peculiarities of soil and climate in the more eastern and western parts of the State. Not having the advantage either of any documents or notes relative to meteorological appearances for many preceding years; of the diseases which prevailed

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when our State was less populous than it now is, and of the changes which they may have undergone in consequence of the varied improvements in civilized life ; of alterations in the face of the country ; of differences in the cultivation of the soil ; and, I may add, of the increase of luxurious habits ; it will not be expected that the remarks I have made will form more than a mere outline of the subjects, to be enlarged or finished by some one whose talents and acumen of observation will better qualify him for the task.

I have it in view, at a future period, to make further observations on the climate, &c. of Georgia, when I shall have ascertained more accurately the existence of various facts now but imperfectly known.

The title I have prefixed elucidates the manner in which the observations are proposed to be made, and will, in part, suffice as an apology for trivial errors and imperfections.

Savannah, Georgia, 1805.

This State, situated between 31 and 35° of north latitude, like all the other Atlantic States, comprehends a variety of soil. The eastern division, composed of eight counties, is almost entirely level, and without a stone. The fertility of the soil varies from situations and the degree of cultivation. That of the sea-islands affords a very plentiful growth of pine, hickory, and live oak, so well adapted for ship building, and is peculiarly fitted for the culture of cotton, which make it worth almost three times as much as the upland. It also produces good corn. Between the main land and the islands there is a large extent of salt marsh, which, if cultivated, would amply remunerate the expense of labour. It borders the whole State, and is in some places several miles in width. That part of the islands which is washed by the ocean, is most commonly a firm sandy beach, sometimes at low water several hundred yards in breadth. The islands, and the marsh contiguous to them, are intersected by creeks, of which many are navigable.

The soil of the main land contiguous to the creeks and marshes resembles that of the islands. Above these the rice swamps begin, which, though fertile, are unfriendly to health. Beyond the inland swamps, which extend in some places twenty-five miles back into the country, there is not much rice planted ; yet it will grow equally well in the mid-

idle counties in particular places. The land between the creeks and rivers is less valuable, producing little else but pine, a long grass, and in low spots small reeds; but it affords good pasturage for cattle.

In the middle division, which includes the county of Columbia, the ground becomes more hilly, and the swamps lessen in extent. The soil is various, and more or less fertile, as lying near to or further removed from creeks and rivers; that of the lowermost county is extremely poor, and furnishes scarce any other growth but pine, except in the river-swamp. The clay lands, or mulatto soil, are deemed the most productive. They consist of a black mould and red earth, and, according to the proportions, the soil varies from a darker to a lighter colour. Such land is found on the Walnut Branch in the county of Burke, and is particularly productive. Corn, cotton (the present staple), wheat, and indigo (the former staple of the State), grow luxuriantly. Different species of oak grow to a great size in this kind of soil, which also produces walnut, hickory, mulberry, dogwood, &c. the last a sure evidence of good land. Alternating with this there is sometimes to be met with a very rich and almost black soil. Sometimes the different soils are intermixed. Most of the creeks and rivers have a margin of swamp of varied extent, which is often overflowed in wet seasons, to the great injury of the planters. These swamps are very rich, and when cultivated produce very plentiful crops; but it is generally expected to lose one in every four or five, by the freshes. They are heavily timbered, which, when converted into staves, &c. amply reward the labourer for his trouble. At the distance of one hundred miles from the sea-board the country gradually becomes more broken and stony; and the hills successively increasing in height, terminate in mountains on the north-west side of the State. In the same manner the soil at a distance from creeks and rivers changes from sand, or a mixture of clay and sand, to a stiff clay, better calculated for the culture of corn and tobacco, which has hitherto been the principal product of the upper counties.

A great proportion of the land in the lower and middle divisions is pine-barren, which, though less productive than the other species of soil, is more healthy, and, from the good range which it affords for stock, is considered as a very necessary appendage to a swamp plantation. Generally at the depth of a few feet, and sometimes much less, the soil of

the pine-barren, which is sandy on the surface, changes to clay. From repeated observation I am convinced that this kind of land is more productive than has been hitherto supposed; and independent of the immense quantity of timber which it furnishes for plank, framing, &c. will eventually be thought more valuable for cultivation. Like all other lands, it is capable of much improvement, and hence rising in the scale of fertility. This must depend upon the increase of population.

From the vast quantities of marsh and low grounds in the counties more immediately bordering on the Atlantic, it will be naturally supposed there is a great predominance of moisture in the atmosphere, and that the water is generally bad. The first is evinced, in co-operation with the presence of nitrous acid in the air, by the speedy rusting of polished metals, and by silver turning black if not frequently rubbed. The like is observable in the middle counties. The last admits of no dispute; it is in many places brackish, and this increases as you approach the ocean.

This State is watered by a considerable number of rivers, which might be made navigable at a comparatively small expense. The Savannah affords water sufficient for boats of one hundred feet keel, as far as Augusta. From this to Petersburgh, at the confluence of Broad and Savannah rivers, the navigation might be continued by the removal of a few obstructions.

As the rivers approach the sea-coast their course is slow and unobstructed by falls. Those of the low country may with more propriety be called arms of the sea, for they extend but a short distance, and terminate in deep morasses.

Besides a variety of creeks and rivers, the country is interspersed with numerous fresh water lakes or ponds, many of which in dry seasons contain no water, while others have never been known to become dry. These savannas add beauty to the landscape, and furnish excellent pasturage. In the county of Burke, between the waters of Buck-Head and Ogeechee, there is one called the Alligator-Pond, the depth of which I have been informed has not been found, and that it produces plenty of good fish. Their size is various; some of them being several miles in circumference. It is remarked by those who live contiguous to them, that they are most healthy when, by frequent rains, they are kept constantly filled. The reason is too obvious to be mentioned.

In proportion as we advance from the sea-board, the water becomes more fit for culinary purposes, and the country in general more healthy. Perhaps the salubrity of the sea-islands is an exception to the last. The nearer to the sea, the nearer to the surface of the earth is water found. I have before remarked that it is not good or pleasant. Is it not probable that pure, cool, and pleasant water might be had at a greater depth below the surface of the earth? The experiment is worth trying. Good springs are frequently found which are never known to fail. I know several in the county of Burke which afford plenty of cool water, but in some it has an unpleasant taste. The water has not been analysed, but from the taste it is known to contain lime. These springs are contiguous to a large body of sea-shells, which have been frequently noticed by writers. This remarkable body of oyster-shells begins at Nelson's Ferry, on the Santee river, sixty miles from the ocean; and running in a north-east and south-west direction, in a line nearly parallel to the sea coast, crosses the Savannah river, about ninety miles from the sea in a straight line; thence continuing its course through Burke county, the ridges have been traced to the Oconee river; but others say to the northern branches of the Altamaha. Mr. Bartram, in his travels, thus speaks of them. "On the Georgia side of the river, about fifteen miles below Silver-Bluff, the high road crosses a ridge of high swelling hills of uncommon elevation, and perhaps seventy feet higher than the surface of the river. These hills are from three feet below the common vegetative surface, to the depth of twenty or thirty feet, composed entirely of fossil oyster-shells, internally of the colour and consistence of clear white marble: they are of an incredible magnitude, generally fifteen or twenty inches in length, from six to eight wide, and from two to four in thickness, and their hollows sufficient to receive an ordinary man's foot. They appear all to have opened before the period of putrefaction, a transmutation they appear evidently to have suffered. They are undoubtedly very ancient, or perhaps antediluvian. The adjacent inhabitants burn them to lime for building, for which purpose they serve very well, and would undoubtedly afford an excellent manure, when their lands require it; these hills now being remarkably fertile. The heaps of shells lie upon a *stratum* of yellowish sand mould, of several feet in depth, upon a foundation of soft white rocks that has the outward appearance of free-stone, but

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on strict examination is really testaceous concrete, or composition of sand and pulverized sea-shells. In short, this testaceous rock approaches near in quality and appearance to the Bahama or Bermudian white rock." The appearance of such an immense quantity of marine productions at so great a distance from the present boundaries of the sea, has given rise to much speculation. They prove that the waters of the ocean once washed those parts; but from what cause or causes they have since so far receded, is, and ever will be, involved in obscurity. Other circumstances or facts confirm the supposition that the flat country, extending for many miles from the sea in all the States south of New-York, has suffered a total change. Dr. Ramsay says, "there are some circumstances which make it probable that the whole of the low country in Carolina was once covered by the ocean. In the deepest descent into the ground, neither stones nor rocks obstruct our progress, but every where sand or beds of shells; intermixed with these, at some considerable depth from the surface, petrified fish are sometimes dug up." The like is observable in this State. Marine shells, and other substances, the known products of the ocean, are almost every where met with by digging eighteen or twenty feet from the surface of the earth. Various suppositions have been formed respecting the evident alteration which the maritime parts of the southern States have undergone; and whether the advocates of the deluge derive an additional argument in support of their doctrine from the above facts, I leave others to determine.

The climate of Georgia has a resemblance to that of tropical countries, in the summers being warm and long, and it differs from northern latitudes, in the winters being comparatively mild and short. It, however, resembles the last in variableness. The extremes of heat and cold are much greater here than in the West-Indies. In the latter, the mercury in Fahrenheit's thermometer in the shade, and so placed as to avoid all reflected heat, seldom exceeds 90°, nor falls below 80° in the course of the year.* Hence there is little difference between the winter and summer of tropical countries. It is to be observed, that the heat in the open sun is considerably more in the West-Indies than with us, although in the shade it is less. Does this arise from the influence of the tropical breeze alone? In the former it is

* Moseley on Tropical Diseases, and the Climate of the West-Indies.

remarked by Dr. Moseley, that the thermometer frequently stands at 120 and 130°, and sometimes much higher, according to the clearness of the sky, and as the situation is more or less reflecting. I have known the mercury, at the distance of one hundred miles from Savannah, rise to 121° in the sun, when it was at 96° in the shade.* Governor Ellis, in a letter to a correspondent, dated Savannah, July 17th, 1758, speaking of this climate, thus expresses himself: "It is now about three o'clock; the sun bears nearly south-west, and I am writing in a piazza, open at each end, on the north-east side of my house, perfectly in the shade; a small breeze at south-east blows freely through it; no buildings are nearer than sixty yards to reflect the heat; yet in a thermometer hanging by me, made by Mr. Bird, and compared by the late Mr. George Graham with an approved one of his own, the mercury stands at 102°. Twice it has risen this summer to the same height, viz. on the 28th of June and the 11th of July. Several times it has been at 100°, and for many days successively at 98°, and did not in the nights sink below 89°.† I think it highly probable, that the inhabitants of this place breathe a hotter air than

* Mr. Henry Ellis, F. R. S. who was Governor of this State in 1758, remarks, "I have frequently walked an hundred yards under an umbrella, with a thermometer suspended from it by a thread, to the height of my nostrils, when the mercury has risen to 105, which is prodigious."

† A variety of facts could be easily adduced to prove that our climate, as well as that of all the United States, has greatly meliorated in the recollection of many of our oldest inhabitants. The Pennsylvanians (at least those who have resided long in that State) remark, that there has been a very perceptible alteration in their climate; that their winters are neither so intensely cold, nor their summers so extremely warm as they were sixty or seventy years ago. Writers have often noticed the great change in the climate of Italy since the period in which Virgil flourished. He describes it as being so cold as to freeze wine in the casks. It need not be said how mild a climate that country now enjoys. Dr. Hugh Williamson accounts for it from the general state of cultivation in the regions of Hungary, Poland, and Germany; even to the very confines of the Baltic and German ocean. It is the opinion of this writer, that all remarkable changes in the climate of any country, may be properly attributed solely to the state of cultivation; and this opinion is corroborated by many others. In addition to the remarks of Mr. Ellis, it would appear that the heat of our climate is moderating from some thermometrical remarks of Dr. Chalmers, in South-Carolina. In the year 1750, the heat was 96°, in 1751, 94°, and 1752, 101°. Whether this heat was from accidental or fortuitous circumstances, and whether our summers are really becoming more temperate, a repetition of facts and observations must determine. I would infer that they are, from the increase of population in the western and north-western parts of our continent, and from the diminution which must from thence result in their vast and extended forests.

any other people on the face of the earth. The greatest heat we had last year was but 94°, and that but once: from 84 to 90° were the usual variations; but this is reckoned an extraordinary hot summer.* In another place he adds: "The same thermometer I have had twice in the equatorial parts of Africa; as often at Jamaica, and the West-India islands; and, upon examination of my journals, I do not find the quick-silver ever rose in those parts above the 87th deg. and to that but seldom: its general station was between the 79th and 86th deg. and yet I think I have felt those degrees, with a moist air, more disagreeable than what I now feel." I regret it is not in my power to ascertain the general range of the thermometer since Mr. Ellis wrote, but have reason to believe the heat has not yet lessened very much. Savannah at that time was but a small place, not very compactly built; and though he thinks the heat was in some measure owing to the height of the neighbouring woods, this cause still subsists, though in a less degree. At present, from the increased number of houses, the free circulation of air is more obstructed, and the reflection is much greater; both of which causes powerfully increase the heat of cities. It would not be surprising if, under the intense heat we experience every summer, the *ictus solis*, or, as it is called by the French, *coup de soleil*, should frequently occur. Cases of it, however, are rare. It seldom proves suddenly fatal in the West-Indies; and I have never known a case of sudden fatality from this cause in this State. Instances are more numerous in some other parts of the United States than in the West-India islands, although the absolute heat of the sun is less. In Philadelphia, in latitude 39° 56', persons have been killed suddenly; and at Pekin, which is in latitude 39° 54' north, upwards of eleven thousand persons died in the streets in eleven days, in 1743, from the action of the sun's rays.†

The dangerous effects which so often result from drinking cold water when the body is much heated, in the northern cities, are almost unknown here. We are informed by Dr. Rush, that few summers elapse in Philadelphia, in

* Long continued and violent heats have generally been considered as foreboding hurricanes.

† The excessive heat in Pennsylvania has sometimes proved fatal to persons who have been much exposed to it. Its morbid effects discover themselves by a difficulty of breathing, a general languor, and, in some instances, by a numbness and immobility of the extremities. RUSH.

which many persons are not affected by drinking cold water. In some seasons four or five persons have died suddenly from this cause. He adds, "these accidents seldom happen, except when the mercury rises above 85° in Fahrenheit's thermometer. Whence arises our exemption from this evil under a heat much greater? Dr. Ramsay, in speaking of this subject, observes, "our water lies so near the surface of the earth, that the difference of its temperature from that of the common air, is not so great as to create danger, unless in very particular circumstances;" and immediately before, he says, "the evils that every year take place more or less in Philadelphia, from drinking cold water, are unknown in this city" (Charleston). The reason he assigns cannot operate in the upper parts of Georgia, where the heat often continues above 90° for many days together, and where the temperature of the water is perhaps little if any less than in Philadelphia.

I wish it were in my power to say that instances of sudden death, from drinking spirituous liquors, as rarely occurred as from drinking cold water. What else can be expected but the most violent determination of blood to the head, and consequent apoplexy, when the stimulus of an immoderate quantity of ardent spirits is added to the heat of a vertical sun? Apoplexies from this cause are not infrequent, and are melancholy warnings of the danger of sacrificing to the bottle in warm climates.

It is not so much the immediate heat of the sun, as the sudden transitions from heat to cold, and vice versa, which we are to fear, and which so often affect those more particularly who are unused to this climate. Against the former we may defend ourselves; but against the latter we cannot always be guarded. These transitions are sometimes very great. I have known the mercury fall 12° in two hours. On the 10th of January, of the present year,* the thermometer at 7 A. M. stood at 21°, on the 14th at 75°, and on the 18th again at 21°. Here were two variations in eight days of 54 degrees. Between the *coldest* day of last January and the *hottest* of the present month (July), there is a difference of 80 degrees. Dr. Ramsay, in his Sketch of South-Carolina, notices a variation of 83 degrees between the heat and cold of different days in the same year; and, he adds, "a difference of 46 degrees in the different hours of

the same day, in South-Carolina, is to be found in its historical records."*

If the difference of 10 degrees throughout the year, as already noted, in the weather of the West-Indies,† produces such fatal effects on the constitutions of new-comers, have we not a right to expect a greater train of evils in our climate, where the transitions are eight times as great? Dr. Ramsay says, "the difference between our coolest and warmest summers ranges between 89° and 96°, and the difference between our mildest and severest winters ranges between 34° and 48°. The greatest degrees of heat and cold between the middle and southern parts of this State and Charleston, are not very dissimilar. My residence has not been long enough to ascertain the average medium of heat and cold throughout the year with sufficient precision; or rather, I have not yet had sufficient opportunity for making observations. I have known the mercury rise to 68° and fall to 17° in the month of January of two different years; and to fluctuate between 70° and 93° in the month of July of one year. From repeated observations of myself and others, I can with safety say our summers are not generally hotter, although they are much longer, than they are in Pennsylvania and Maryland; nor the nights so hot. In those States I have felt them almost suffocating, and frequently the hottest part of the twenty-four hours. Dr. Ramsay says the nights in Charleston are warmer than they are in Philadelphia, Baltimore, and New-York.

The southern parts of the State, lying within a few degrees of the torrid zone, are fanned by the trade winds, and every day by the sea-breeze, which also serve to purify the air. The last commence about 10 A. M. and continue to blow

* Similar transitions are not unusual in Pennsylvania. Dr. Rush, in his account of the climate of that State, notes, "after a day in which the mercury has stood at 86 deg. and even 90 deg. it sometimes falls, in the course of a single night, to the 65th, and even to the 60th degree. In a summer month, in the year 1775, the mercury was observed to fall 20 deg. in an hour and a half."

† But it is the transitions from one to the other which are so annoying to human nature. It is these transitions between the tropics, small as they are, out of the sun, that give rise to those diseases which are so fatal to unseasoned Europeans; because their fibres and fluids are not qualified to suffer the diurnal revolutions in the frame, from the various impressions of the atmosphere, as condensed, or rarified, by the absence or presence of the sun: as brought from the sea by day, or loaded with damp and frigiferous particles from the land by night.

briskly the rest of the day. The nearer to the Atlantic the more they are felt, and in proportion as you recede from the sea-shore their influence lessens. In the middle district of Georgia they are scarcely if at all felt. They moderate the extreme heat of our summers; which is also frequently tempered by pleasant showers in the after part of the day. The hottest day of the year in Charleston is sometimes as early as June; that of the last year I have noted in July. This summer as yet has been extremely warm. The mercury on the 13th and 14th of May was at 94° , and on the 15th and 16th at 93° ; on the 1st and 2d of June at 94° , and the day following it stood at 95° . Since that, it has been several times at $94\frac{1}{2}$ and 95° , twice at $96\frac{1}{2}$, and twice at 97° .

From what has already been said, it will be seen that our winters are generally mild and pleasant. Snow is seldom seen. I do not recollect it to have fallen more than three times in the last six winters. The greatest of these was on the 9th of January, 1800. It came from the south-east, and was much deeper on the sea-islands than one hundred miles from Savannah. The last was on the 15th and 16th of February, of the present year, and was eight inches on a level. The mercury was at 21° .

The number of days in the year 1802 in which the mercury was at and above 90° was 37. I have known it to exceed 90° for ten days in succession.

I have generally remarked the hottest hour of the twenty-four to be about 3 P. M. It sometimes varies, and the mercury frequently continues stationary from 11 A. M. to 7 P. M.

The number of cold days, in proportion to our latitude, is considerably greater than those which are extremely hot. It is to be observed, however, that a degree of cold which would not be thought very unpleasant in the latitude of 40° is here the reverse. This is probably owing to the debilitating and relaxing effects of nearly seven months summer heat upon the nervous system, whereby the nerves and vessels of the superficies of the body are incapable of resisting the action of cold upon them.

The months of April and May are generally the most healthy throughout the year. June is not often sickly. In this month, of the year 1801, cases of remittent were common. The endemics of the season begin to be rife in July, and increase in August and September. The last I

consider the most sickly of the whole year, and the cases are marked by symptoms of greater violence. It is owing to three causes.

1. The hot weather of July and August, and generally of May and June, debilitates the system; hence increases its excitability, and disposes it more readily to be affected by the remote and exciting causes of fever, which exist most in September.

2. From the air being more fraught with putrid effluvium from decaying vegetables, mill-ponds, and other stagnant waters and putrefying substances; and this will more especially be the case should July and August be very rainy, and September hot and dry, as was the case last year.

3. The mornings and evenings being commonly cool, and the middle of the day extremely hot, and the dews being very great, increase the danger of catching cold, (as it is vulgarly called) particularly with those who do not take the necessary precaution of keeping fires in the morning and evening, and adapting their clothes to the temperature of the air.

From the above circumstances, and from the variableness of the weather in the month of March, attended with blustering winds, this month and September may be considered as the most unpleasant of the year.

Frosts seldom appear in the middle parts of Georgia before the last of October, and do not often extend more than a few inches into the ground. Sometimes we have a frost in April. This was the case the present year. When they happen so early, they do much injury to the cotton and fruit, particularly peaches.

There is a difference of several weeks between the vegetation of the eastern and middle counties; and the nearer you approach to the sea-coast, the earlier the fruits of the season appear; and vice versa as you advance towards the western boundaries of the State. The more slowly vegetation advances in the spring, the more favourable is it to fruitage; and, on the contrary, while a warm or forward spring buoys the hopes of the farmer to expect a plentiful crop from his fruit-trees, they are often marred by a frost in April.

I have elsewhere remarked the unpleasant feelings which many persons, and especially new-comers (to whom they are alarming), experience upon the first approach of the vernal heat. Dr. Ramsay has noticed the same thing. He

Observes, "In the spring, when the sun begins to be powerful, a languor and drowsiness is generally felt, respiration is accelerated, and the pulse becomes quicker and softer."* These symptoms arise from the rarefaction of the blood, and the relaxing and stimulant effects of heat upon the muscular fibres, by which the blood is more forcibly propelled to the head and breast. We are thus enabled to account for the frequency of epistaxis in the spring, and of haemoptoe and pneumonia in the northern States.

The weather, as in more temperate latitudes, is variable; and I have more than once known a fire pleasant in June, when the air has been loaded with moisture. I need not add, that at such times fires are healthy. On the other hand, fires are sometimes uncomfortable in the middle of winter, and it is found agreeable to have the windows raised. Transitions from cold to heat are common. It is not unusual for a very cold day to be succeeded by one in which the sun will be rather unpleasant. The mercury often exceeds 70° in January, and I have seen apples of a second growth almost arrive at maturity in November and December. Our climate, however, is not marked by such extremes as that of Pennsylvania and the adjoining States. In the former, the mercury has been known to fall from 37 to 4½ below 0 in twenty-four hours.† Rivers are sometimes froze over in a few nights, so as to bear a man and horse, and again passable in boats in two or three days. The winter in the eastern States is less versatile, much more severe, and the ground is sometimes covered with snow for three months, with little intermission.

The variableness of the climate of Georgia is also manifested by the difference in the quantity of water which sometimes falls in two successive years. As yet I have not been able to determine the number of inches one year with another, nor the quantity of evaporation. It is sometimes so excessive as to overswell the common boundaries of creeks and rivers, doing much damage,‡ and again the scarcity of rain has sometimes been alarming; creeks dry up, and the fairest hopes of the planters are blasted. In June, July, and August of 1802, I have marked thirty-eight days of rain. (See Account of the Weather and

* Sketch of South-Carolina.

† Rush on the Climate of Pennsylvania,

‡ Such was the great rise in the river Savannah in the month of January, 1796, generally known by the name of the Yazoo fresh.

Diseases of that year) In June of the present year I have noted nineteen days of rain, and in the first twenty days of July we had but three light showers. The immoderate quantity which fell the last year did much damage, and the late deficiency is likely to prove extremely injurious.

If the citizens of Georgia suffer a heat more excessive, but of less duration, than the inhabitants of the West-Indies, they have the consolation of being almost exempt from the destructive hurricanes which have been remarked to visit those islands periodically, and whose melancholy course is ever remarked by the most dreary ravages.*

* In the first fifty-two years of the last century, three hurricanes are on record as having visited the neighbouring State of South-Carolina. The two first, viz. in 1720 and 1728, were previous to the settlement of this State; and the last, which occurred in 1752, is recollected by some of our oldest citizens to have been extremely violent; but, having never seen any historical account of it, I cannot detail any particulars of its violence, duration, or effects. But not so respecting the late storm which threatened destruction to our city; which is fresh in the recollection of every one, and which will not be forgotten while memory lasts.

It commenced on the 7th of September, 1804, about 10 o'clock P. M. with a degree of violence by no means alarming. The wind was from the N. E. Thus it continued until Saturday morning, about 5 o'clock, when it became more moderate; but, alas! it was only a temporary suspension. In a very short time it redoubled its force, and continued to increase until late in the afternoon, at which time it seemed most dreadful. Nor did it at all abate until about 10 o'clock P. M. when the wind veered to the S. E. but it still continued to blow with considerable force until about 10 o'clock of Sunday. About the middle and latter part of Saturday, the wind was continually shifting from the N. to the N. E. accompanied by considerable showers of rain. The inhabitants being necessarily confined to their dwellings, had but a very faint representation on their minds of the fury of the elements, and the ravages which they were committing. The imagination, which is ever prone to give the highest tints to scenes of this nature, was defective in this instance; and the most vivid did not paint in colours sufficiently glowing the awful effects of the gale. Sunday morning called the people from their houses to behold them, and melancholy was the sight. In every part of the city were to be seen the marks of its tremendous violence. Trees torn up by the roots and many broken in twain, fences laid prostrate on the earth, houses unroofed, some blown down, and chimneys almost without number, levelled to the earth; yet these were nought compared to what was to be witnessed below the bluff. Here the sight was pained to behold the ruin which a few hours had produced. The remains of houses, vessels of various burthen, different articles of freight and domestic produce, bales of cotton, hogsheads of rum, sugar, molasses and tobacco, formed one confused heap, and prevented the passage from wharf to wharf. These were destroyed from one end of the city to the other, and, with other ravages, formed a melancholy spectacle. Not a vessel in port rode out the storm, and except such as were sunk, all were carried by the tide to the highest part of the wharves. Twenty seven houses under the bluff, with their contents, were either in part or totally destroyed. Of some, not a vestige was remaining. It would be

The countries between the tropics in the western latitudes most frequently suffer from those storms, in which the ele-

endless to attempt an enumeration of all the damages which ensued from this hurricane. For force and extent, its equal is not on record in the annals of our country. Every part of the coasts of Georgia and South-Carolina suffered in a greater or less degree; vessels in many places were carried on shore; and sorrowful were the accounts which were daily brought of shipwrecks and the loss of lives. The destruction on Hutchinson's Island, of buildings, stock, crops, &c. was immense; and, to add to this melancholy detail, many, many persons met a watery grave. At Sunbury, in Liberty county, the bluff was completely washed away, and several houses destroyed. The planters along the whole sea-board of Georgia and South-Carolina were more peculiarly sufferers, for they had to combat the combined fury of the wind and tide. Many of the plantations were completely overwhelmed by the water of the ocean, and on some scarce a building left standing. Some were torn to pieces, while others were removed whole to another spot. The Fort on Cockspur Island, a few miles below the city of Savannah, was entirely destroyed, and most of the men drowned. It is said, that such was the fury of the waves, that boxes of cannon shot were carried a considerable distance, and that a cannon, weighing 4800 pounds, was moved several yards.

At Charleston the loss of property was immense. The commencement, violence, and duration of the gale, was similar to what has been already described. Houses, shipping, wharves, alike shared in the general ruin; trees were torn up by the roots, and some lives were lost.

Perhaps, if an accurate estimate could be made, it would be ascertained that the loss of property and the general injury which was sustained from the violence of the wind alone, was not equal to that which was the immediate consequence of the great height to which the tide in many places rose. It was said to have risen in Charleston three feet higher than ever has been remarked since the hurricane of 1752. On some parts of the coast of Georgia, it rose twelve feet beyond its usual height. The time of high water at Charleston was at twelve o'clock of Saturday, at which period the tide had exceeded, by several feet, the common spring tides. Soon after this it began to ebb, and at about 6 o'clock P. M. it had fallen about two feet. This was the time of low water, and as the ebb was so inconsiderable, it was apprehended the next flood would much exceed the former. In this, however, there was happily a disappointment. From the hour just mentioned, the tide continued to fall, and on Sunday morning at 1 o'clock, though it was the period of high water, the tide was not so high as it was the preceding evening at 6 o'clock, which was, as already noted, the time of low water.

In recording the effects of this hurricane, we are not to be confined in our detail to the sea-coast alone, to the towns bordering on it, or to those places over which the waters were carried with irresistible force. Unfortunately the effects were not limited to such narrow bounds, and we have to lament that almost every part of the State felt its fury, in a greater or less degree. Houses were blown down, and in many horses, &c. buried in the ruins. Bridges carried away, fences destroyed, and trees innumerable levelled to the earth, either blown up by the roots or broke off at various heights from the ground; in many places they were piled on each other to the height of many feet; extensive avenues were opened through woods, before impervious for any considerable distance, to the sight, and the roads were completely impassable. To one who had not beheld this scene of ruin, the recital would be almost incredible; but the highest colouring

ments seem to wage war against each other in the autumnal season; from whence August, September, and October are named the hurricane months.

which could be given to this chaotic picture would not be adequate to convey to the mind a just idea of it. Reasoning upon just grounds, it may be said, that the damage which has been sustained in our forests is more than equal in real value to all the other losses combined. The total loss of the most valuable timber is incredible, and the lapse of a century will not repair it. On some places there were not left standing a sufficient number of trees to supply the necessary quantity continually required for buildings, fences, &c. Those trees which resisted the fury of the blast were completely stripped of their foliage and small branches. Some had the appearance of being burnt, and others of being whipped. Two causes united to produce this effect, the mechanical action of the wind, and the chemical action of the salt spray. This was carried many miles into the country, did great injury to vegetables, and gave the idea to the country people that it *rained salt*. In the night it had the appearance of small particles of fire, and to many ignorant people it was a source of much apprehension. From my own observation, it is not in my power to say that any uncommon appearance was manifest in the heavens, either during or immediately preceding the gale; but it is asserted on good authority, that a meteor, somewhat like a star, was seen in the S. E. quarter, on the afternoon of Saturday, and that a luminous appearance, like a sudden flash of lightning, was observed towards the S. W.

The mercury in Fahrenheit's thermometer was at 75 deg. on the 8th of September, at 7 A. M. and at 3 P. M. it stood at 79 deg. The quantity of rain which fell on this day measured four inches twenty-nine hundredths.

It is not altogether in place at this time to attempt to deduce any physical inferences from this storm (by which term I would call it in preference to a *hurricane*), nor to say to what extent Mr. Webster's theory of the connection between unusual phenomena in the earth and atmosphere and pestilential diseases is corroborated by it. It would seem, from various accounts, that some general and common cause existed in the atmospheric regions the last year, for the production of calamities similar to that which ravaged our State and South-Carolina. Almost every port on the coast of the United States, from Salem to St. Mary's, suffered in a greater or less degree. At Boston it raged with resistless fury from Tuesday morning, the 9th of October, until the morning of Wednesday. The wind at first blew from the S. S. E. then shifted to the E. with increased violence, and, lastly, fixed itself in the N. E. From this quarter it blew with a degree of force unprecedented in the annals of that town. At Providence, (R. I.) at Marblehead, Gloucester, Worcester, and many other places in the eastern States, it was equally violent, and did great damage. The storm was attended by a fall of snow to the depth of fourteen or fifteen inches at Walpole, (N. H.) which remained on the ground thirty hours. At the Island of St. Kitts it blew with dreadful force from Monday, the 3d of September, to the following Wednesday, effecting inconceivable damage.

In Upper Canada, rain fell in immense torrents during the early part of September, sweeping away bridges and almost every thing else in its course; and we have had various authentic accounts of similar occurrences in different parts of Europe, particularly on the Rhine.

These things, with various other events, among which may be enumerated the appearance of myriads of caterpillars in every part of this State, but more especially in the southern counties, laying waste in their destructive course, thousands of acres of cotton; thus blasting the fair hopes of

It would be a phenomenon to see ice strong enough to bear the weight of a man; although I have seen it half an inch thick in one night, yet it generally melts the succeeding day, whenever it is exposed to the action of the sun's rays.

My observations have not yet enabled me to determine what winds are most prevalent at certain seasons, or those which are most conducive to health. This last depends in a great measure upon the nature of the country over which they blow. Such as sweep extensive morasses or swamps, or pass over mill-dams, imbibe the causes of those fevers which generally prove so fatal in September and October. From the languor which accompanies winds from the east, they are unfriendly to health in winter and spring; and the north and north-west winds, from passing over mountains and large tracts of snow, bring with them those invigorating qualities which are so remarkable in the northern and eastern States. Winds which blow from the east in summer moderate the heat, and thus are somewhat salutary.

(To be continued.)

the planter; together with the unusual prevalence of diseases in the western parts of Pennsylvania, the uncommon severity of the present winter in the northern States, accompanied by great snow storms, and attended by a great number of shipwrecks on various parts of our coast, denote something that deviates from the usual routine of physical events.* They are eminently entitled to the notice not only of the historian, but of scientific societies, who should endeavour to ascertain the connection these events have to each other; whether they are to be considered as cause and effect, or whether their coincidence is to be viewed as arising from one general and the same cause. Observations frequently repeated, and conducted with much accuracy and attention, must alone enable us to draw any positive inferences, or to deduce certain principles whereon to erect a sure foundation for a just and rational theory. These last observations are merely offered as hints to stimulate others to prosecute a further inquiry into such facts; to learn, if possible, whether they are the result of accidental causes, or depend upon certain fixed, but, perhaps, unknown laws of our physical world; not as being strictly relative to the subjects of this communication.

* Near the town of St. Harmant, in France, a shower of caterpillars fell about 4 o'clock A. M. on the 24th of June, so as to cover a space of ground about eight hundred feet in length, and one hundred in breadth. The dreadful pestilence which raged at Malaga the last year is fresh in the recollection of every one; and all the ports of the Mediterranean, from Cape de Gat to Cadiz, experienced it in a greater or less degree.

REMARKS on the TREATMENT of BURNS by COLD WATER; together with OBSERVATIONS on the ORIGIN of the YELLOW FEVER. By Dr. MAXWELL M'DOWELL, of York, Pennsylvania: Communicated in a Letter to Dr. MITCHILL.

THE following cases of scalds which were speedily and completely cured by the application of *cold* water may, perhaps, be considered not unworthy of your notice. The people, at least in this part of the country, are in possession of so many *infallible* nostrums for scalds and burns, that medical aid is seldom requested in such casualties.

Case 1. In the month of January, 1805, my servant girl upset a pot of boiling water upon her right foot; being at home I was early brought to her assistance, but not soon enough to prevent her from taking off her stocking. A complete vesication had taken place over the whole extent of the metatarsal bones, and the stocking removed a piece of the cuticle as large as an half dollar. I immediately had her foot placed in a bucket of cold water, which instantly relieved her of pain. I occasionally dropped a lump of snow into the water, to prevent a diminution of its coldness. I obliged her to sit with her foot in the cold water till she could remove it without experiencing a return of pain. In the course of an hour the cold application was discontinued, and a linen cloth impregnated with *ol. oliv.* was applied to the denuded cutis. We were not deprived of her services one hour.

Case 2. Mrs. ——, about the first of September, 1805, when she was taking some cabbage out of a pot that had just been removed from the fire, overset the pot, and poured the boiling water upon her left foot. Happening to be in her house when the accident took place, I saw her immediately, and, without permitting her to take off her stocking, I had her foot placed in a bucket of cold water. The smarting instantly ceased. In two hours, during which time the water was frequently changed, she was entirely relieved. When the wet stocking was removed the only discoverable trace of the scald consisted of a slight *blush* of inflammation over the articulation of the toes with the metatarsal bones, which did not prevent her from wearing her shoe. No subsequent application was required.

I have had an opportunity of trying the same remedy in

a third case of scald lately, with the like happy result as stated in the above cases.

Since the foregoing cases occurred, I have seen in the Medical and Physical Journal, edited by Professor Barton, a communication from Dr. Thomas Walmsly, in which the Doctor speaks in high terms of the *Tilia Americana* as a remedy for scalds and burns. The Doctor's mode of applying the *tilia*, is to macerate the "liber" in "cold water" till the water becomes viscid, and keep the part affected "constantly wetted" with it. He considers the cold water as having very little agency in effecting the cure. The above cases, however, seem to prove that the Doctor's mode of applying the *tilia* is not calculated to ascertain its degree of sanative operation in scalds and burns.

Does cold water cure scalds by lessening or suspending the sensibility of the injured part, and also remove the injurious cause, by abstracting the stimulus of heat? My patients were so completely relieved of pain when their feet were placed in cold water, that they considered it unnecessary to let them remain many minutes in it; but when they were indulged in their inclination, they very soon experienced a severe return of smarting.

Your city has lately received another visit from her old tormenter the yellow fever; and I find from the public prints that the former dispute respecting its origin has been revived with considerable warmth. That disease has been chased from continent to island, and from island to continent, and still, in the opinion of many respectable physicians, it is the exotic of every climate. My remote situation from the scene of action enables me to view the arguments adduced on both sides of the question in a more dispassionate manner than would, perhaps, otherwise be in my power to do. The advocates for importation exultingly quote Dr. Chisholm as unshaken proof of the truth of their doctrine. That celebrated physician has certainly given an inconsistent account of the origin of his "pestilential Boulleam fever," conveyed to Grenada by the ship *Hankey*. The Doctor, in speaking of Boulleam, says, "it is not inhabited, but occasionally visited by the inhabitants of the adjoining continent, who have several scattered patches of millet on it." From whom did the crew of the *Hankey* receive this *contagious* disease? The Doctor has told us that the island which furnished a name for the disease of

which he treats, was *uninhabited*. In another part of his work he informs us that "the negroes in this part of Africa are ferocious in an extraordinary degree, and are even said to be cannibals. This circumstance preventing the erection of any sort of accommodation on shore, during the *nine months* the Hankey lay there, the settlers were obliged to live on board; and the rainy season coming on almost immediately after their arrival, and the heat being at the same time intensely great, they endeavoured to shelter themselves from both by raising the sides of the ship several feet, and covering her with a wooden roof." Now, if we suppose that the Hankey, instead of reaching the Boullam shore, could at that time have become stationary in any part of the Atlantic ocean, many leagues distant from all animated beings except those of the subnatant tribe, and experienced the same degree of heat and moisture, the same disease would have made its appearance; and then some respectable medical author, as Dr. Chisholm, might have announced the appearance of a *pestilential atlantic fever*, and certainly with as much propriety as that gentleman did the appearance of his "*pestilential Boullam fever*." I have not seen Dr. Chisholm's publication, but I presume the above quotations from it are correct, as they were published in one of your city papers by a writer who laboured hard to support the doctrine of importation. I admit that the crew of the Hankey were labouring under yellow fever when they arrived at Grenada; but Dr. Chisholm might easily have discovered the origin of the fever without travelling to an "*uninhabited*" island.

A CASE OF TETANUS, which terminated in Recovery. *By Dr. P. TRACY, of Norwich, in Connecticut: Communicated in a Letter to Dr. MITCHILL.*

AMONG the variety of diseases incident to mankind, a few are involved in more obscurity as to their pathology, and perhaps no one has more generally baffled the skill of the physician and proved fatal, than cases of tetanus. The insurmountable difficulties that occur in attempting to investigate the principles on which the regular operation of the nervous power productive of muscular motion depends, renders it peculiarly embarrassing to explain the phenomena of diseases immediately implicating this intricate part of the

animal system; these difficulties have appeared so great to Dr. Cullen and other writers of eminence, that in treating of tetanus, a disease confessedly belonging to this head, they have omitted all attempts to explain the pathology of the disorder, and candidly avowed their ignorance on this subject. The doctrine of sympathy, so ingeniously advocated by the late Dr. Darwin, has unfolded many curious facts; but although his discoveries have expanded the field of medical science, and promise a rich harvest to those who have abilities and industry sufficient to explore the path he has pointed out; still, at present, many wonderful operations connected with animal life remain involved in obscurity, notwithstanding the light he has really shed on some part of the subject. With due deference to his elevated capacity and superior ingenuity, I will venture to say that his explanation of the physical causes of the spasmodic or convulsive form of disorders (including tetanus), at least is involved in intricacy and doubt.

I feel no way disposed to attempt an explanation of the pathology of a disease thus left enveloped in obscurity and doubt by the first medical characters, and am conscious of being in every respect unqualified for the task. This disorder, like every other species which usually proves fatal, has excited the attention of physicians, and led to the adoption of a diversified round of medicaments, which, by frequently proving unsuccessful, has kept in obscurity not only the *rationale* of the disorder, but lessened the confidence of the faculty relative to the proper practice which ought to be adopted in the case.

The two varieties of the disorder marked by systematic writers, are those which arise from a puncture or *lesion* of a nerve, or that which takes place without any such exciting cause, but which has followed an exposure to take a violent cold. The latter of these I conceive is only entitled to the appellation of an *idiopathic tetanus*, which I believe has more generally yielded to appropriate remedies than the former; for that depending on local injury not frequently discoverable by inspection or removable by topical application, continues, notwithstanding the utmost efforts of medical skill, to increase its effects on the nervous system, until life is exhausted and nature sinks. Under which head the case of tetanus annexed properly belongs, I confess myself at a loss to determine. How far the continued application of cold water to ulcerous legs, by varying the secretion from

the sores, or by checking a morbific discharge perhaps necessary to the animal economy, was capable of producing the complaint; or whether the effects of cold partially applied, by its general operation on the system as a debilitating power, by interrupting the native train of healthy actions, might have led to the effect; both remain questions which I am unable to decide. These doubts were the cause of much embarrassment to me in attending on the case. The happy issue of the disorder, while it affords me the highest satisfaction as regards the feelings of humanity, I judge will be deemed a sufficient apology for making the case public.

Sunday, June 1st, 1805, was called to visit J. B. a man aged forty-four years, of a robust habit, but labouring under an ulcerous state of the legs, arising from a syphilitic complaint, for which he had been using a solution of Corr. Subl. topically. I found that three days previous to my being called, after having waded in the water for some hours, for the purpose of collecting rockweed, a severe chill ensued, followed by a violent pain through the sternum, together with a stiffness and rigidity of the muscles of the neck, attended with great difficulty in opening the mouth. He had called in a neighbouring physician, and used some medicines, which afforded no relief. On examining the case, I found the subject greatly distressed with severe pain through the lower part of the sternum, and shooting from thence through the shoulders to the back part of the neck, producing a considerable retraction of the head, and his jaw so closed as to render it very difficult to get the handle of a spoon (flatways) between his teeth. The pain at the sternum, from thence through the back of the neck, recurred more severely at intervals, but the stricture on the jaws continued uniform and fixed. At the paroxysms of pain his sufferings were exquisite, a universal rigidity of the dorsal muscles occurred, with a strong retraction of the head, assuming the marks of a true opisthotonus. At the termination of the severe fits of pain, a universal profuse sweat would issue forth, and for a few moments he would sink, and seem ready to expire, and then gradually revive. These severe turns would generally recur in fifteen or twenty minutes. The pulses were small and weak, and no febrile heat existed. Convinced that the case was tetanic, I applied a large epispastic to the gastric region, and directed to embrocate the neck and muscles of the spine with volatile liniment, together with the

addition of oil of amber. Finding that he had been costive for some days, I directed a common enema to open the bowels, and gave him ten grains of calomel combined with a little thin mucilage, through a goose quill, which was the method he adopted to take his drinks, which, fortunately by the loss of some of his fore teeth, he was enabled to receive into his mouth. In conjunction with these medicaments, I directed him to take forty-five drops of laudanum every four hours, and repeat it at shorter intervals in case the spasms recurred severely. To the ulcers on the legs I directed the application of flax-seed cataplasms, and draughts on his feet. For support, I recommended veal broth and the use of Madeira wine.

Monday, June 2d. On visiting the patient, found that he had rested some during the night, but that he was still subject to pains as the day before. The pain at the sternum had somewhat abated, the blister having fully drawn. The jaws remained fixed as the day before. The laudanum had been continued with regularity, and the enema had produced some alvine discharge. The pulse remained low, without febrile heat. I directed the use of laudanum to be continued as before prescribed, and repeated the same quantity of ten grains of calomel, with directions to continue the use of the liniment to the spine and throat, and the support with the wine and broth to be continued as usual.

Tuesday, June 3d. On visiting the patient, found that he had passed a distressed night. The jaw remained immoveable and closed, and the spasms had recurred with more severity, and at times affected the lower limbs with great violence, so as to lead his attendants to apprehend that his hip joints were dislocated, attended with great rigidity of the dorsal muscles, and a constant retraction of the head. He made some efforts, during the night, with his hands to open his mouth, but found them unavailing, and compared the impossibility to effect it with that of severing a billet of wood lengthways by manual force. At periods the power of swallowing was wholly lost, and then in a short time would recur; but he always appeared greatly distressed in the act. I directed the laudanum to be increased to sixty drops every four hours, and to take twenty-five drops of the ol. succin. at a dose once in two or three hours, as the violence of the spasms might require, also to continue the liniment to the spine, &c. and repeated ten grains of calomel, and ordered him to take wine with freedom.

Wednesday, June 4th. On visiting the patient, found that he had passed a distressed night. The jaws continued closed. The spasms had recurred with great severity, and had extended to the lower extremities, which frequently were extremely convulsed, and produced the most exquisite distress, with a general rigidity of the dorsal muscles, which rendered the spine and lower limbs perfectly inflexible, and kept the head drawn back. He swallowed with difficulty, but had been able to take the laudanum as directed. His pulse remained low, and his breathing at times was laborious with dyspnoea. I directed the continuation of laudanum and *ol. succin.* in the usual quantity, and repeated ten grains of calomel, and ordered two drachms of strong mercurial ointment to be rubbed on the thighs, and the support to be continued with the wine freely. On inspecting the ulcers on the legs I found them to assume a flaccid appearance, with a sanious discharge issuing from them, and one of considerable depth on the gastrocnemius muscle appeared of a livid hue. For these I recommended a strong decoction of the bark to wash the ulcers, and dressed them with lint wet with the tincture of myrrh, and covered them with pledges spread with *ungt. Basilic.*

Thursday, June 5th. The patient continued much as yesterday. He had taken the laudanum and *ol. succin.* as directed, and the mercurial ointment had been rubbed on the thighs. He had slept some during the night, but was subject to frequent startings, which were always productive of severe spasms. The masseter muscle still kept firmly contracted. When he slept, an evident relaxation was observed to take place. The pain through the sternum had considerably abated, and his lower limbs seemed most affected, and at times were exceedingly convulsed. Continued the dressings to the sores, which had assumed a better appearance; their margin appeared less livid, and the matter discharged became more healthy. The laudanum was directed to be continued as yesterday, and the same quantity of mercurial ointment was repeated on the thighs.

Friday, June 6th. On visiting the patient, found him much as yesterday, except the retraction of the head had in some degree abated, with less pain in that region. The mouth still continued obstinately closed; when sleeping it considerably relaxed. The severe cramps on the extreme parts still continued to occur, and extended equally to the arms and the lower limbs. He had slept some during

the night, but was aroused by the smallest noise, and always awoke in great distress. The calomel he had before taken during the night had gripped him severely, and been productive for the first time of several powerful discharges by the bowels, which had much weakened him. The ulcers discharged a more laudable pus. Their margin had in a considerable degree lost their flaccid appearance, and assumed a more florid hue. I directed the continuation of the laudanum and ol. succin. in the same quantity, and at the same intervals as yesterday, and ordered two additional drachms of mercurial ointment to be rubbed on the thighs, and to supply him as freely with wine as he could bear without heating him too much.

Saturday, June 7th. On visiting the patient, found that he had passed a tolerable night, though subject to frequent startings and severe crampy affections in the extreme parts. The jaws at times, when awake, seemed to be a little relaxed, with less rigidity of the muscles of the neck and drawing back of the head. He still remained incapable of taking food, except through a tube made for that purpose. For the first time some effect of the mercury appeared on the mouth, discoverable by the odour in the breath and the flowing of the saliva. Directed the continuation of laudanum in the usual quantity, and the repetition of the mercurial ointment by rubbing, with orders to continue the wine with freedom. The ulcers had assumed a bright appearance, and discharged good pus.

Sunday, June 8th. The patient continued much as yesterday; had slept some during the night, but was subject to frequent startings and severe crampy affections, principally in the lower extremities. The jaws remained still so closed as to render him incapable of taking sustenance, except through the tube. A flowing of saliva still continued, with soreness of the mouth, fully evincive of the effects of the mercury. He had taken the laudanum as yesterday, together with considerable quantity of wine. Directed the laudanum and wine to be continued as usual.

Monday, June 9th. The patient passed a very distressed night. The crampy affections of the lower limbs recurred with great severity, and produced the most exquisite distress. His jaws remained firmly closed. An unusual rigidity of the muscles existed so as to render him wholly inflexible. The mercury continued to affect the mouth. Had a spontaneous discharge by stool in the early part of

the day. Ordered the laudanum increased to eighty drops once in four hours, and the wine to be used freely; the embrocation to the spine and limbs to be continued. The sores appeared well.

Tuesday, June 10th. He had rested more the last night than usual. The cramps, though still severe, had been less frequent and violent than ordinary. A rashy efflorescence had appeared on the breast, shoulders, &c. The mouth still evinced the operation of mercury on the system. Directed the continuation of eighty drops of laudanum every four hours; and, anxious to support the mercurial action, directed a drachm of the ointment to be rubbed on in the usual manner. A free use of the wine was directed to be continued.

Wednesday, June 11th. On visiting the patient, found that he had passed a more comfortable night. The spasms had less frequently recurred, and the rigidity of the muscles of the neck and spine had considerably lessened, although the jaws continued fixed as usual. The rashy efflorescence still continued on the surface, and two or three small impos-thumations appeared forming on the legs. A gentle salivation continued. I directed a continuation of eighty drops of the laudanum every four hours. Still wishing to actively support the mercurial process, ordered one drachm of the mercurial unguent to be repeated, and wine to be continued as usual with freedom.

Thursday, June 12th. The patient to day appeared more placid; had rested tolerably during the night. He had been able once or twice during the night to voluntarily open his mouth further than before. This faculty, however, was but momentary. The general rigidity of the muscles had much abated. The efflorescence still continued, and the impos-thumations seemed advancing towards suppuration. The mouth had become very sore, with a free discharge of saliva. I directed a continuation of eighty drops of laudanum at the usual periods. As he had been costive for some days, I directed a strong infusion of senna, sweetened with manna, to be given him, and the free use of the wine to be continued.

Friday, June 13th. The patient had passed a comfortable night; the spasms had much abated. The physic had produced two free dejections. The stricture of the mouth still continued considerable. A gentle salivation also continued, and the efflorescence remained on the surface as

usual. Directed the usual quantity of laudanum and the free use of wine.

Saturday, June 14th. The patient still continued comfortable, although very weak. The spasms had mostly subsided. He had slept quietly. Directed the diminution of the laudanum to sixty drops every four hours, and the support to be continued.

Sunday, June 15th. The patient much as yesterday; the gentle salivation continued, and the sores on the legs appeared to be fast healing. He still continued unable to open his mouth to take food. Although the general tetanic appearance had left him, I directed a continuation of fifty drops of laudanum every six hours, and ordered his jaws to be embrocated two or three times daily with *ol. olivarum camphorated*.

Monday, Tuesday, Wednesday, and Thursday, June 16th, 17th, 18th, and 19th. The patient continued to generally amend, the motion of the jaws gradually increased, and the general spasmodic state seemed to have subsided. A universal eruption on the surface continued, and several small imposthumations had supplicated. The salivation still continued gently. The use of the laudanum was continued, and occasionally a small quantity of the mercurial ointment was rubbed in to support the salivation, and physic was given to keep the bowels soluble. The wine was continued with freedom. From this time the patient continued daily, although gradually, to grow better, and, at the end of three weeks from this period, was able to go abroad, and at present is apparently in a comfortable state of health.

A question will naturally arise in contemplating this case as to the relative effects of mercury and opium in effecting the cure. Opium from its known powers as an antispasmodic, has universally been resorted to in cases of tetanus, and many instances are on the records of medicine, of cures being effected wholly by it, when given in large quantities and long persisted in; and I conceive that no prudent physician would omit its use in a case of this kind, and wholly rely on any other medicine; still many auxiliary means are justifiable to connect with its use; one of which I conceive to be an active use of mercury. This, from its known powers on the human frame, is proved to be fully capable of exciting a new and general train of actions in the animal system, frequently very powerful in removing pre-existing

diseases of a formidable nature; and this was the motive which induced me to adopt it in this case. How far it may be thought that the syphilitic state of the patient had any immediate connection with the tetanus, I am at a loss to determine; but at least I conceive, under that circumstance, that the mercury was more clearly indicated and justifiable to adopt, and, I am inclined to think, was an active agent in the cure.

OBSERVATIONS on the Non-Importation of the YELLOW FEVER into Spain: Addressed to the Editors of the Medical Repository, by Dr. FELIX PASCALIS.

TO you, gentlemen, who at an early period had opened the field of philosophical inquiry on one of the most interesting subjects to the welfare of nations, I offer the following observations. They more particularly belong to a work which has been honourably conducted by you for the improvement of medical science. Having sided with you in the opinion you have so often learnedly defended, respecting the non-importation of the yellow pestilence, it does not behove me to praise your fidelity nor your talents on that score; but I think it a duty to deposit in your collection whatever new documents it is in my power to offer to well-disposed minds. Should they contribute to the elucidation of a far-famed controversy, then you will the more participate in the merit of exploding pernicious and false doctrines.

The present system of quarantine introduced in all the European ports, cannot but excite astonishment and regret. From the frigid regions of the north, down to the confines of Barbary, it is now supposed that America is generally under a pestilential influence, which resulting from certain specific substances and their occult qualities, threatens to pervade all the ancient world. All the possible avenues are not only severely guarded; but in a great nation, they have made it a doctrine to neutralize, or smother it with certain fumigations. In another, premiums are offered for a graduated scale of its affinities with every kind of merchandise. Ventilation, confinement, conflagration, and immersion, are hardly thought sufficient for its destruction.

When the word of alarm is given in one extremity of the continent, armies are set on foot in various directions to intercept the transmission of the impalpable poison, throughout adjacent countries. A mistaken plan of self-preservation has, in many instances, isolated provinces, cities, and villages. No attempt has, however, been made to prevent its circulation above that low sphere in which men and brutes walk or creep on the surface of the earth. But what is more dreadful, Europeans, panic-struck, will hardly permit to doubt of, or to controvert the reality of that imaginary agent of desolation and death. Who could undertake to cut the hundred heads of this new hydra?

I apprehend that sound philosophy will in time accomplish this Herculean labour. Notwithstanding, congratulating the learned in the United States, who have adopted a far different and more intelligible doctrine, and to convince our American antagonists, I beg leave to prove,

I. That that part of Europe, the South of Spain, where of late years the yellow pestilence has much prevailed, was frequently visited by the same in preceding centuries; and while it raged at different times in all the populous new settlements of America, no possible means of contagion nor importation were thought of; the present system is more, therefore, the offspring of terror and theory than of necessity and consistency.

II. That the facts which have induced the government of Spain to adopt that system, were materially misrepresented, misapplied, and wrongly construed to that effect.

III. That the report to the French government, of Dr. J. N. BERTHE, Professor in the University of Montpellier, and one of the medical commissioners sent to Spain, is materially incorrect in the most essential parts of its historical and medical statements; void of authorities and documents relative to repeated and recent occurrences of that epidemic in this part of the world; and that said report has contributed much to the establishment of the present system of quarantine and health regulations throughout Europe.

IV. That from actual circumstances, and an immense number of facts, the yellow European pestilence bears no more characters of an exotic and contagious disease, than that of North-America.

It has been my good fortune, during my investigation of that interesting subject in Spain, often to be gratified with the hospitable, polite, and generous services of distinguished

personages and eminent physicians, to whom I did not dissemble my opinions. Their authoritative belief I must now publicly contradict, sometimes with the very means they themselves furnished. Probably they will soon read these remarks, and should they only remember the professional industry which they often witnessed in the pursuit of truth, will they not easily suppose that I write without national prejudice, that I am not unmindful of gratitude, while I do not cease to respect their eminent talents?

From a work I have ready for the press, I must now extract some facts and leading observations, which are necessary to judge better of the following exposition.

1. The European yellow pestilence is in every point of symptoms, diagnostics, and fatality, exactly similar to that of the western world. Among other authorities I will refer you for the present to the accurate description of it by Dr. Maria Gonzales, of the Royal Hospital of Cadiz, in his *Dissertacio Medica Sobre la Calentura maligna Contagiosa*, &c. which has been put in your hands. It has not escaped the attention of other writers, that the disease could assume, in many instances, the remarkable symptoms of the Asiatic plague, but in no ways different from what has been observed, and so well authenticated by experienced practitioners of these States, viz. buboes, carbuncles, and gangrenous spots on various parts of the body. (Dr. J. M. de Arejula.)

2. The evolutions of the epidemic were in every instance, in more than twenty-four large cities, principally of Spain, Italy, and Barbary, marked with remarkable atmospheric circumstances of excessive moisture in the winter and spring months, of drought and unwholesome winds in the summer, of excessive heat, and other unusual alterations in the weather, which were prejudicial to vegetation, to cattle and domestic animals. Various diseases, which are always the forerunners of pestilential epidemics, were likewise observed in the largest towns.

3. Local circumstances, productive of mephitic and deleterious exhalations, were never wanting. In many towns of Andalusia they are perhaps more abundant than in those of the United States. Cadiz, that beautiful and apparently the neatest town in the world, is exposed to the most offensive effluvia from its common sewers, and from the port at low water. The Rock of Gibraltar itself is exposed to all the effects of the vapours from the Bay and numer-

ous shipping, when, by their specific gravity, and a certain temperature, they are accumulated on the declivous soil of the town and garrison.

4. In the range of all descriptions of people and constitutions, the pestilence attacked with more violence those of the northern climates ; but as it was not an annual endemic, the natives were not protected against it. The males, however, died in a much greater proportion than the females, and these more than the children, the weak, the aged, and the infirm. The natives of tropical and southern countries, and those who were sufficiently seasoned to those climates, remained equally safe and unhurt, as we have seen them in the United States. An opinion strongly prevails in Spain, that, like the small-pox, the yellow pestilence cannot be undergone but once. We have often seen the reverse in our populous towns. Such destructive character is, moreover, to be rejected, because being not aware of an absolute uniformity of disease, during their epidemic, the Spaniards classed cases of less intensity with their *tabardillos*, a fall fever, a bilious remittent, which annually prevails among them, and even in Barbary, just as we see it often in North-America. I would also easily believe, that instances of repeated attacks of the same pestilence within only the period of a few years, are very rare ; the one may prove to be a kind of preventative against the other for a certain length of time.

5. The epidemical scourge was sometimes confined within a narrow spot and a few houses, during many weeks, or it seized on a few victims, at a distance from each other, when, all at once, and unexpectedly, it pervaded an immense population, beyond the reach of any probability of communication and intercourse, and continued with unabated fury. In Cadiz and in Seville it appeared that the inhabitants having assembled in all places of worship, and in religious processions, to implore divine mercy, the pestilence assumed, by more contact, new characters of virulence and diffusion ; while the phenomenon could be easily accounted for by the influence of the passions of terror and despair, which were so effectually roused in the awful acts they resorted to, as the last that could avert their impending ruin. Yet airy and elevated places were less accessible to the disease than the low and confined situations. Rains, storms, succeeding winds or calms, could visibly increase or abate it. Sometimes adjoining towns could not infect each other ; the con-

tagion which had passed over large intermediate populations, could not be traced but to a very distant focus, and again in its way back, it met with the same unaccountable repulsion. Many remarkable occurrences of the kind took place in the low Andalusia, and in different military corps; some regular, and the others of militia, mingling together, guarding the same lines, and exposed to the same influence, were uniformly preserved, and their comrades fatally preyed upon.

I cannot help mentioning here the astonishing preservation of a village called *Alcala de los Panaderos*, in the neighbourhood of Seville, which consists of about one thousand five hundred families, chiefly bakers by trade, daily supplying with bread the numerous inhabitants of that large town. Their article of trade being of the first necessity, *Alcala* was included within the infected lines of Seville, and none of those villagers ever dispensed with their daily task of carrying fresh bread, receiving payment, and mixing with every description of people. But, wonderful to relate! there never was an instance of yellow pestilence nor death among them, nor in their village, during the prevalence of the disease, which actually swept off fourteen thousand six hundred and eighty-five inhabitants of Seville! Dr. J. N. Berthe, in a note affixed to his report to the French government, in order to explain this indubitable and astonishing fact, seriously proposes his opinion in favour of the *fumigatory* influence of the numerous ovens incessantly burning in that village, which may have thus preserved the inhabitants. Should this be the case, the smoaking ovens not only purified the atmosphere, but effectually destroyed the poison adhering to, and received in the bodies of the Spanish bakers daily visiting Seville!

“ *Poscimus, si quid vacui sub umbrā*
“ *Lusimus tecum?*” —

Horat. Ode xxxii. lib. 1.

In following thus a very irregular march, in its progress and in its propagation, the epidemic having uniformly increased in the inverse ratio of the length of the days, and in consequence of the succeeding cold and intense night dews, it abated at last towards the end of the fall; seldom was it protracted till December, and only in one instance until January. Its extinction was effected without the concurrence of frost, which seldom takes place in those European latitudes.

Their uninterrupted winter rains purify indeed the atmosphere as much as our early cold temperature. Every possible mode of purification was afterwards resorted to; than which burning every suspicious article of furniture was no doubt more effectual. No other dangerous attacks were witnessed but upon a few persons returning from the pure air in the country to their former places of abode. Who has not heard of such unfortunate cases in the large towns of the United States?

The epidemic in 1800 prevailed more in the sea-port towns on the ocean than in those of the Mediterranean, from Seville, St. Lugar, Scipiona, Puerto-Maria, Puerto-Real, Rota, to Cadiz and Laisla. It even reached some of the Barbary ports, Tangiers and Tetuam; but it extended also to inland towns, Ecija, and beyond Xeres, Villa-Martin, Bornos, &c. The number of victims throughout Lower Andalusia exceeded no doubt eighty thousand.

In 1801 the yellow pestilence re-appeared, during the months of August and September, in Cadiz and Seville; but as no possible traces of its importation could be agreed upon, the truth of its existence was much controverted in both towns, when, subsiding sooner than usual, it happily terminated the alarm and contest. It lasted its full period, however, in Medina-Sidonia, a large and populous inland town, about eight miles from the salt ponds of Laisla.

In 1803 it invaded Malaga, and swept away about twelve or thirteen thousand inhabitants.

The ensuing season of 1804, offered more melancholy scenes than heretofore, throughout many southern provinces, but more towards the coasts of the Mediterranean, from Barcelona to Malaga, and no further along the ocean than Cadiz. The inland towns of Murcia, Valencia, Grenada, and Andalusia, almost equally suffered. Leghorn, in Italy, Gibraltar, and Alhucema, on the coast of Barbary, might imperfectly represent the triangle of that general pestilence. Thirty-two thousand inhabitants perished at Malaga and its vicinity, and twenty-four thousand in Cartagena, &c. Besides a strong military cordon that was extended between the middle and southern provinces, every town and village opposing their respective guards to their usual intercourse, large bodies of people were not only confined within their own precincts, and devoted to their local infections, aggravated by the dead and the sick, but were exposed to the want of the necessities of subsistence, and to despair, which

circumstances increased much the mortality. One hundred thousand inhabitants are said to have died; than which estimate none is nearer to the truth.

In 1805 the summer was uniformly pleasant and cool in the south of Spain. Easterly winds seldom prevailed, and no longer than a few days. The common bilious remittent (tabardillos) and intermitting fevers were scarcely seen in any part of the country. The combined fleet, returning from Martinico, after having engaged Admiral Calder, made a junction with the fleet at Ferrol, and on the 20th of August entered the bay of Cadiz. In this instance no quarantine, no kind of restriction was required! The numerous sick of the French ship Algeciras, of 80 guns, were sent to the Marine and City Hospital; many died at least with very malignant symptoms; and thus nearly 20,000 men returned from the supposed focus of the yellow fever, without bringing with them a single particle of contagion!

Having thus stated some important facts, I must now call your attention to the novelty of the system lately adopted by the Spanish government, although the yellow pestilence has been so frequently seen, and has raged in their European ports and their American colonies.

I. We are informed, and of the truth of it we cannot entertain a doubt, that during the seventeenth century the city of Cadiz had been four times visited by horrid pestilences; of which there are monumental indications, and religious festivals instituted to commemorate both their duration and happy deliverance.* We do not find sufficient testimony that these epidemics were of the yellow kind; for to sicken and to die rapidly in those times could not be but a plague, and precluded further observation. But since that time yellow pestilence has repeatedly prevailed in Cadiz, particularly in the years 1730, 1736, 1744, 1746, and 1764, of which there are sufficient accounts. The first was critically observed by physicians sent from Seville,† who did not omit to notice the colour of the patients and the *vomito prieto*. The succeeding occurrences are mentioned by a variety of writers.‡ Of the last, which was witnessed by the late Dr. Salvarez, of Cadiz, Dr. Lind informs us, that one hundred persons

* Vide *Dissertacion Medica Sobre la Calentura Maligna Contagiosa que Reino en Cadiz, el anno de 1800*, by Dr. M. Gonzalez.

† *Cadiz Illustrada*. lib. 6.

‡ Dr. Nicholas Rexano, Dr. Gregorio Condemina, and *El Vicario Ecclesiastico de la Isla de Leon*.

died in a day, and that one of his Britannic Majesty's ships that anchored in the Bay was wonderfully preserved. But the Spaniards seem to believe that it was fatal only to the garrison.

Other sea-ports were equally visited, especially Seville, Malaga, and Carthagena. It was for the last that the Royal prescription mentioned in the *Medical Repository*, Hex. i. vol. vi. p. 97, the opiate of Masdelval, took place,* in the year 1785. Of these and many more yellow pestilences in the south of Spain there are proofs in the preface to the translation of Dr. Rush's *Account of the Yellow Fever* in 1793, by Dr. Zuriaga, of Madrid.†

Of the immense mortality produced by this disease, and of its frequent occurrence on the tropical continent and islands of Spanish America, there are so many well known evidences, that it would be superfluous to enumerate them. Dr. Zuriaga, however, admitting its apparent indigenous nature in the torrid zone, says, that it was never heard of till two hundred years after the discovery of America.‡ This is a very correct assertion, for the first who mentioned it was Juan Ferrejra De la Rosa, a Portuguese physician, in the year 1694, exactly two centuries after the expedition of Columbus. But if yellow pestilence be a specific disease, thus added to the catalogue of human calamities, and thrown into Europe from America; why was it so long before it broke out in its native soil, or in some part of the extensive regions or islands where it is thought to have originated? If two ages could elapse before its creation, what known law of nature must we resort to in order to explain this spontaneous evil, except to physical causes, which, under the same circumstances, would produce the same effects in any part of the world? The formation of large towns, the increase of population in the respective settlements of the European powers, with all the accessory and concurring sources of pestilential epidemics, are therefore the only natural causes by which the late appearance of that scourge in the new world can be accounted for, and therefore an obvious justification of the opinion we advocate.

* *Travels through Spain* by the Rev. Dr. Townsend.

† *Relacion de la Calentura Biliosa, Remitente Amarilla que se Manifesto en Filadelfia, en el anno 1793, por el Dr. Benjamin Rush, Professor, &c. Madrid, en la imprenta real, anno de 1804.*

‡ "No hubo noticia de ella en la America, hasta dos Siglos despues de su descubrimiento." *Pref.* p. 6.

It is more than an hundred years since populous and commercial nations, on both sides of the Atlantic, have repeatedly suffered, and were even devastated, by this yellow pestilence; and why did they not then conceive it as an exotic and contagious disease? What have they done with their abundant experience on this subject? Was self-preservation a less active motive with past generations than with the present? Are there any ancient medical doctrines, acts of government, and authoritative observations extant to substantiate either the danger or the means to guard against it? A few physicians of the three principal commercial nations had, it is true, taken up that question, but with opposite tendencies, and none supposed it warrantable to call the attention of government to any provision of quarantine in their intercourse with America. We find no permanent institution of the kind in any part of Europe previous to 1800, except in Marseilles and Italy, and those wholly directed against the introduction of the glandular pestilence from the Levant. In Cadiz, the principal emporium of Spain with America, we do not find a spot of ground for the express purpose of purifying the goods and men of their American shipping; and still that nation vies with any other in number and magnificence of buildings appropriated to public and useful purposes. The Intendant of Havanna, El Sr. Don Pablo Valiente, who was prosecuted for having himself introduced the yellow fever, in 1800, from Charleston, declared to his judges, and without fear of being contradicted, that the Royal Academy of Madrid had not yet even given it as their opinion that it could be imported from the western world. Since that time they have been perhaps much wiser than many of the learned of the age.

The strange and severe system of quarantine and purification which is now resorted to in Europe, is all of a piece with the belief that this ancient pestilence was introduced into Spain from Charleston, in 1800; when it is certain it did not then exist any more there than it did at Vera Cruz, Campeachy, Havanna, Carthagena, &c. where it originates, according to the doctrine of the contagionists, as an endemic. The Spaniards, however, are not the only people to be accused of inconsistency during the impression of terror and just alarm for future times. The health laws of the State of Pennsylvania impose quarantine restrictions on our intercourse with the southern and tropical parts of America, and omit a sister State, or places where the dreaded scourge is

known to appear almost every year epidemically or sporadically.* We might recal to our mind what were the opinions entertained and promulgated respecting the introduction of the yellow fever into Philadelphia in 1793, while it had existed in New-York in 1791, and raged also very much in Charleston in 1792, without any source to which it could then be traced in the West-India islands.

Before the nature and causes of our *own* past and present calamities could be well ascertained, have we not been the first, with the hundred mouths of fame, to sound the alarm in all corners of the world? Have we not long since sketched the very elements of the quarantine restrictions which we now have just reason to complain of? We should have supposed that the Europeans would inevitably conclude that the United States had become an established bed of pestilential streams, when incessantly we watch and trace the current to a distant source, and precisely mark its favourite windings among ourselves. We pretend to assert the purity and innocuity of our soil and of our atmosphere, by torturing reason, sense, and facts into fortuitous contacts with a foreign poison; the cause of which we declare not to exist within our populous cities and shores, lest they should be dreaded and less frequented by strangers. But even these have been no less aware of the communicable poison they might receive among us, since we do not cease to experience new scenes of pestilence; and as we never have succeeded in shutting out the enemy from our ports, they think it safer to shut us from their own. They suppose that we have been mistaken in concentrating the original focus of yellow fever within tropical countries, while it yearly extends and prevails in our latitudes; and they say it is an indigenous disease, or an endemic of this new world, the celebrity of which we have blended with the odium of a blasting pestilence. It is evident that European nations will not be more successful in intercepting the subtil and *Protean* contagion than we have been for these fourteen years: terror, therefore, will have its incalculable progress as long as an erroneous theory can keep it up; and should we be a little longer subservient to this doctrine, we may predict proportionate restrictions, lazarettoes, and as arbitrary purifying quarantines for Americans, in every part of the world, as

* Vide Dr. Ramsay's Sketch of South-Carolina, and his View of the Improvement, Progress, and State of Medicine, &c.

alarm and self-preservation may dictate, in conformity with the most accurate tenets of contagionists and importers of yellow pestilence. We have convincing proofs of so much of their effect as to establish, within a few years, throughout Spain, a system and doctrines which an age of experience could never suggest.*

II. The contagionists will not derive much more credit, if they consider that the facts which induced the government of Spain to adopt the present system were misrepresented and misconstrued to that purpose. Let us inquire into the historical account of the first supposed introduction of the yellow pestilence, which stands thus.† In the year 1800 the ship *Dolphin*, of Baltimore, Capt. *Haskell*, was chartered in the Havanna to transport to Spain the family and attendants of Sr. *Don Pablo Valiente*, Intendant of that colony; she touched at Charleston, South-Carolina, the 2d of June, where she shipped four seamen, and on the 10th she put to sea again. Three of the crew sickened and died, during the passage, of various diseases. They were attended, and their complaints accounted for by the Spanish physician, Dr. *José Caro*, a passenger. The *Dolphin* anchored in the Bay of Cadiz on the 6th of July, and after *only* two days detention, the *Intendant* was permitted to land with his attendants. It was afterwards rumoured that a few persons had experienced a short but fatal attack of the yellow fever, and it was found out that they had been on board of that vessel. In the beginning of the following month, yellow pestilence broke out in the streets *La Boqueta* and *Sopranis*, in the neighbourhood of the Sea-Gate. Some time before, the same was discovered in Seville, at more than thirty miles distance; in Xeres, at fifteen miles distance; and in both instances traced to a few sailors of the *Dolphin* who had got into those places. Thus

* In the year 1804, and during the epidemic pestilence, the Governor of Andalusia was directed to have a quantity of American tobacco transported from Cadiz to the Royal manufactories of Seville, and to supply other towns with American flour from the same port. Particular modes of purification and conveyance of these articles were pointed out by the supreme Board of Health of Madrid, and transmitted to that officer for execution. It might appear incredible, and even ridiculous, to mention what these modes were, and which, if attended to, must ultimately have destroyed the tobacco and flour. The wise and enlightened Governor remonstrated; he exercised his own judgment, endangered no life, and saved the property.

† Vide the preface to the Spanish translation of Dr. Rush's Account of the Yellow Fever in 1793, and the Report of J. N. Berthe, Professor, &c. to the French government.

the foreign contagion was diffused far and wide. The corvette *El Aguila*, from Vera Cruz and Havanna, which had lost five men on her passage, and several North-American vessels, afterwards entered the same bay; and these were as many probable sources of pestilence. The truth of this account is acknowledged in its historical points; and as we now begin to suppose it cannot bear refutation, that the yellow fever previously existed in the ports of departure, or on board of the vessels, the reader must naturally wish to hear of proper certificates, affidavits, declarations, and other testimonies to prove, in the first place, that no disease of the kind existed in Cadiz before their arrival; that as some of their sailors had died during the passage, their cases had been duly ascertained, and that by their cloathing, bedding, &c. or by some articles of the cargo, the fatal communication had taken place; and as the first victims, although scattered, were traced to this or that vessel, their habitations were the true central points of the diffused pestilence.

These authoritative documents were indispensably necessary to carry conviction on such an important decision. I have too good an opinion of a government very solicitous for the welfare of their subjects, to suppose that they omitted to investigate these circumstances; but they never were ascertained; at least proper evidences, if obtained, were not, to my knowledge, produced, nor exposed to the test of truth; in short, they were absolutely wanting, and even otherwise decided. Thus, in the account published by government, the author declares, *No decidiré qual de estas embarcaciones introduxò en Cadiz la fiebre Amarilla.** No, they cannot decide which of the American vessels really introduced the pestilence, therefore the simple historical account has but a dubious foundation, and remains justly open to objections. We might now, without any further comment, reject it. But, for the honour and triumph of our controversy, let us prove that there was no yellow fever in the points of departure from America, nor in any of the vessels; that the pestilence had previously manifested itself in Cadiz and other adjacent places, and many more facts which absolutely subvert the intended meaning and construction of the account.

1. It is well known that in none of the tropical ports which are more frequently visited by this pestilential epi-

* Vide the preface to the translation of Dr. Rush's Account of the Yellow Fever in 1793.

demic, it breaks out at so early a period as April or May; and at the Havanna and Vera Cruz, there was not the least appearance of it at the time of the clearance of the vessels before mentioned. The Spanish Ministry were so well informed of the truth of this circumstance, that his Catholic Majesty's Consul in the Southern States, Don Diego Murphy, was ordered by his government to apply to the Medical Society of Charleston for information. On the 5th of April, 1801, at an extraordinary meeting of that body, the official request was read, with inquiries respecting the possibility of the ship *Dolphin*'s having contracted the disease in that port, or of the contagion having manifested itself in her crew while she remained there, from the 2d to the 10th of June. The deliberation was unanimously determined with a formal and negative answer, and signed by order of two and twenty respectable physicians, "To the best of their knowledge no yellow fever had existed in that town, nor in the port of Charleston, prior to the 20th of June." In a well appropriated exposition these professional and experienced judges proved their doctrine, and declared that said disease had never been propagated by contagion.

2. Dr. Don *José Caro*, a Spanish physician, who was passenger on board the ship *Dolphin*, has given his deposition and evidence before the Royal *Audienza* of Seville, to account for the diseases and death of three of her crew, during the passage, which were not yellow fever; and the same is acknowledged in the report published by order of government.

3. It is duly ascertained and certified, that before the arrival in Cadiz of any suspected vessel, mortal cases of the yellow pestilence had been observed in this and the neighbouring towns. As yet we suppress individual names and authorities; under peculiar circumstances we are obliged to substitute the pledge of honour.* But we can say that these

* The reader will easily conceive, that under a government which holds an absolute controul over the medical profession, scientific men may be involved in the charge of contempt for established regulations, when they meant only to controvert the doctrines which dictated them, and thereby bring upon themselves very serious consequences. This has been frequently the case in Spain, and was occasioned by opposing the adopted doctrine of importation, as I shall hereafter state more particularly. It is not there practicable to expose in its own nakedness and shame that invidiousness, nor that malignant spirit of persecution which long controversies too often beget among a lower order of scientific men. With similar restraint the world has been, no doubt, deprived of a considerable mass

facts were offered to the above mentioned tribunal by Don Pedro Valiente, then under criminal prosecution for the violation of the health regulations, &c. Of this we shall hereafter state more detailed circumstances.

4. Public records make it appear that the sickness broke out the 2d of August in Cadiz, the supposed first infected port, and the 23d of July in the suburb of *Triana*, in Seville. How can such anterior infection be explained? It is answered, that some seamen of the *Dolphin* had already reached the last port. But this vessel we find was never infected, nor could it be proved that she carried any contagion. As for the others, nothing is said about them.

Again, *St. Lugar y Barramedas*, a town containing eight thousand inhabitants, on the Guadalquivir, mid-way between Cadiz and Seville, must be passed by water or by land; but it continued healthy, and was considered as a safe place of refuge, until the latter end of September. Why did the contagion prove so tardy at this place? What could oppose its fury in a little but very filthy town, where it afterwards destroyed no less than two thousand five hundred persons?

We will hereafter relate many more facts glaringly inconsistent with the doctrine of the contagionists. At present let it be observed, that in every part of the world, they are too often reduced to the expedient of contradictorily modifying the operations of that poison. Sometimes it has the velocity of the wind, the elasticity of an aether; and although it was inert on the subject who carried it for a great distance, it instantly devours innumerable victims: at others, and under the same visible circumstances, it is heavy, and, deprived of expansion, it creeps low like ponderous gases; it is abundantly collected on those bodies it has deprived of life, and yet it can rise no more, nor adhere to and prey upon human beings. It certainly cannot be the province of philosophy to account for those contrary effects! But how much more indignantly should they be rejected, when they are connected with causes and facts so visibly misapplied and misconstrued?

As for the government which has sanctioned all their bad tendencies, it is not our task to disentangle and exhibit all the links of its errors. However powerful and justifiable

of facts and observations relative to yellow pestilence, from Spanish physicians, and other individuals of candour, talents, and learning, who certainly are not rare in that nation. Delicacy must, therefore, impose as a sacred duty, that of withholding names and authorities which were confidentially communicated.

are its own motives of self-preservation and public welfare, what degree of reason, of common sense, and of medical philosophy can it have the right to influence? Systems of sins and indulgences are so easily associated under its operations, that in this controversy, as in many other points, it has no right to bias our judgment. Yet national honour and justice may conspicuously prevail among the Spaniards, even over their most warm prejudices; witness the issue of the criminal prosecution of the Intendant from the Havanna, accused of having, by bribery and breach of port regulations, exposed his country to the greatest calamity. His trial was at first conducted with severity. His rank, his wealth, and his friends could not rescue him from eleven months imprisonment, nor from the risque of condemnation. He was arraigned before his judges at Seville, having no other privilege but that of his defence. We have read the original copy of his memorial, signed by an eminent counsellor, *Blas Fabiel de Andrade*, than which no forensic production, as far as we can judge, could be more pressingly eloquent, or better supported with reason, truth, and facts. It aimed at various points:—"Yellow fever was not proved to be contagious—its real origin and causes were as yet uncertain and undefined—no medical body, not even the Royal Academy of Medicine of Madrid, possessed documents sufficient to establish the importation—the vessel of the accused had not sailed from, nor had touched at any infected port—none of his company had ever shown symptoms of that disease—he had violated no law of his country or of his king—the same pestilence existed in Cadiz and in Barbary before his arrival—if such calamity could be so easily transplanted through the channels of commerce, why had no effectual barriers been opposed to it during past ages of experience?—He was not guilty, and in a dignified manner he implored justice and mercy!"—Don *Pablo Valiente* was honourably acquitted, and afterwards promoted at court; the memorial was buried in oblivion; and the Americans continued to be quarantined!

The succeeding renewed calamities do not offer any thing in favour of the contagionists. The yellow pestilence broke out and prevailed in some degree in Cadiz and Seville, as I have before observed. A great contention took place concerning the truth of its existence. In the last town the first physician who dared to declare that he had seen the *Fiebre Amarilla* was banished from it. What insanity! what crime to assert the existence of the American pestilence, which

could not, this year, be traced to any vessel, nor said to have been imported! To ease the public mind, a proclamation was issued the first of October, by the city magistrates, informing the citizens that the bill of mortality, during the past month, had included two hundred and three inhabitants only! Thus the advocates of importation may be gratified with the supposition, that there was no yellow fever in Cadiz nor Seville. Notwithstanding, it was forcibly and officially acknowledged in a large and elevated inland town, *Medina-Sidonia*. It raged there, in central wards, and the mortality was great.* Had not this epidemic the characters of local and domestic origin, at about twelve miles from the seaports, where it is denied to have existed? or if it was revived from old contagious matter, where could the inert fomes be supposed to exist during ten months?

In 1803 and 1804, Malaga was the unfortunate port where the Americans were strongly suspected to have disseminated again the usual pestilence; but no regular investigation has been effected. In the beginning of the last epidemic, the physician who first announced it, before its foreign package and vessel could be discovered, became so disgraced as to be compelled to exile himself. In three days he arrived in Cadiz, where his servant soon died with yellow fever, which was soon propagated and diffused. Upon the construction of these facts the epidemic was accounted for, throughout four extensive provinces! Here, I confess, I do not feel much the necessity of further reflection, and shall proceed to the examination of the report of *J. N. Berthe*, Professor of the University of Montpellier, to the French government.

(To be continued.)

REMARKS on the Means of preventing the YELLOW FEVER:
Communicated by VALENTINE SEAMAN, M. D. to a Committee of the Board of Health of New-York.

HAVING received a copy of the circular request of the Committee, enclosed in a polite note from the City Inspector, I have ventured to submit the following to their consideration.

* Vide *Observaciones Justificadas y Decisivas, &c. por Dr. D. Tadeo La-fuente*, p. 24, and *De la Preservacion, Conocimiento y Curacion, &c.* by the same, p. 28. a.

In respect to the much agitated question of *importation* or *domestic origin* of yellow fever; or, to speak more precisely, whether that disease is spread from person to person by contagion, or arises from some other cause, apart from the diseased bodies of men, it is not my intention at present to inquire; it being conceded upon all sides that its *propagation* depends upon a peculiar state or property of the air, or of something existing in and united therewith arising from local circumstances.

Assuming it then as a fact, that this certain something does exist in the air, as an essential cause, *a causa sine qua non* of the *prevalence* of yellow fever, it must be of the first consequence to ascertain whence it *originates*, its peculiar *chemical composition*, and its *physical properties*. In the first place, to remove, as far as is within our power, the original matters whence it is derived, thus striking at once at the root of the evil; secondly, by chemical re-agents to counteract or correct its poisonous qualities, when its formation cannot or has not been prevented; and, thirdly, to remove bodily what cannot be corrected by chemical, or prevented by precautionary measures.

That the original cause is closely connected with, if not entirely dependent on, the decomposition of dead animal and vegetable substances, there can be but little doubt; hence the well-directed exertions of the Corporation to remove, as speedily and completely as possible, every thing of that kind, ought to be assiduously persevered in, and perhaps with additional attention.

The peculiar chemical qualities of the matters emanating from these substances, and the best means of correcting them, or of the nature of any other change in the air, if there should appear to be any, beside what may have been derived from this source (and there very probably may be) and of remedying it, are desiderata well worthy of particular attention.* To obtain this information, would it not be a good plan to stir up the chemical and philosophic mind to

* Attempts to arrest or destroy the cause of pestilence upon this principle, appear to have been repeatedly made by the Committee, in strewing quick-lime in different places, and by slackening it in others. The populace have also, upon the same principle, attempted, by burning tar barrels in some instances, to obtain the same desirable ends. All these experiments, however, have been grounded rather upon their hopes than upon any knowledge of the nature of that which was intended to be destroyed.

inquiry, by offering a prize medal* for the best communication delivered upon that subject by the day of , to be examined and decided on in the delicate and cautious manner generally adopted by societies which are in the practice of giving out prize questions?

In regard to the physical nature of this deleterious matter or property in the air; Does it possess a specific gravity greater than that of ordinary air, whence, like the deadly gas of the *Grotto del Cani*, it creeps along the ground, and settles in the lowest places? It seems pretty clearly established, that it is very much confined to the lower parts of the city; for although it has at times risen up on the hills, that has generally been well accounted for by the peculiar situation of some streets favouring the force of the wind, in driving it from the place it otherwise would naturally have occupied. Perhaps its being so much confined to the lower situations, is merely in consequence of a greater accumulation of the original cause, and a stagnation of the air therein, they being less favourably situated for a free circulation than the higher grounds. Might there not be some means devised completely to *ventilate* the lower parts of the city, to prevent any stagnation, and constantly to cast out the therein existing air, to give place to other of a more salubrious nature?† Would not a prize question, on the best means of effecting this, be worthy the attention of the Committee? Air is light, and possibly some ingenious correspondent

* Perhaps the Committee may think this mode of obtaining information too whimsical or trifling for them to adopt; if so, let them then fall upon some other plan: there certainly appears to be something more than merely the public good necessary to stimulate individuals to exertion on such subjects.

† Ventilation is known to be an essential means of checking the prevalence of many diseases: it has been successfully practised in the small way in innumerable instances. The idea, however, of keeping up a continual change of air on thirty or forty acres of low ground, I am sensible, to many, may seem so extravagant, as to endanger its becoming rather the subject of ridicule than of serious consideration; let it, however, be remembered, that till within a few years it was almost impracticable to ventilate a ship, which now, by a very simple apparatus, is effected in a few minutes. Rivers of water have been thrown out from the depth of mines. The ingenuity of man has broken the force of thunder, and safely conducted the lightning from the skies. Why then should we despair of discovering an easy method of changing the circumambient air of a small portion of our city? If this idea is extravagant, it is no more than apportioned to the desperate nature of the evil it is intended to remedy. If it is ridiculous, perhaps it is merely so from its novelty.

might contrive something to answer this purpose, without the aid of much force or expense.

Should the ideas of the most plausible on the foregoing subject appear too visionary, or of not sufficient importance to justify their being put into operation, the Committee need be under no obligation to act upon them.

Water, in effect, seems to augment, or at least to give a kind of spring to the poison, whatever it may be, as a recurrence to facts that have occurred at different times in this city fully demonstrates. Might not a more particular attention to the state and modification of the pavement,* and regulation of the yards and cellars, especially in the more level parts of the city, diminish the quantity of standing water, and lessen the noxious effects produced by rains at certain seasons, so as to convert that into a real blessing which now acts often as a most dreadful scourge.

If yellow fever is so highly contagious as it is by some said to be, and which I shall not here pretend to deny, I cannot conceive of any practicable means which will afford us any tolerable security against its introduction. We cannot prevent persons who may have the germs of that disease in their bodies from coming among us. This assertion is not grounded in mere speculation; it is a fact founded upon an actual and pointed experiment. When this city was, during the revolutionary war, surrounded by guards upon every quarter, there was very little or no difficulty for individuals from their enemies to enter it at almost any time. If then a *rigid military discipline* was not adequate to the prevention of individuals of their *enemies* from entering a garrisoned town, is it possible to believe that a *peace establishment* of a *mild republic* can restrain the intrusion of their neighbouring *friends*? Now, since we cannot keep it out, it behoves us to double our exertions in preventing, destroying, or removing that peculiar air, without which it can never spread.

V. SEAMAN.

* In the year 1798 I addyressed the Corporation upon the then degenerating manner of paving the streets, pointing out the necessity of strictly adhering to a particular plan, as it related to the ornament, convenience, and healthiness of the city. The evil then complained of seems to have generally and regularly progressed. Years have not changed my ideas upon that subject: there is certainly great room for improvement in that business.

CASE of FEBRILE DISEASE, attended with MALIGNANT SYMPTOMS: Communicated by VALENTINE SEAMAN, M.D. to Drs. MITCHILL and MILLER.

THE peculiar circumstances attending the following case may perhaps entitle it to preservation. If it should be thought worth a page in your Repository, it is at your service.

V. SEAMAN.

On the 11th day of the 1st month (January), 1806, I first visited S. G. aged about seventeen years. She was then affected with almost continued chills and shiverings, with constant ejections of great quantities of bitter, yellow, biliary matter from her stomach; her bowels rather constipated, some head-ache, and considerable pain (though not very severe) in the left hypochondrium. Her eyes appeared in no respect disordered; her skin was dry, tongue natural; her pulse a little accelerated. On the next day the sickness at stomach still continued, accompanied with shiverings at times, and at other times with a general tremor, without any sense of coldness. She uniformly puked after swallowing any thing, either of medicine, food, or drink.

On the third day the sickness at stomach was somewhat abated, the chills and tremor very much moderated, and the pain in her side nearly gone; but she complained of a general painful sensibility of the skin over the whole surface of the body. During all this time, from the commencement of her disease, there appeared to be but very little commotion excited in the sanguiferous system; the pulse was somewhat frequent, but that seemed rather like what might be attributed to the general agitation caused by the affection of the stomach, than to any regular ordinary effect of fever; the day after, however, (being the fourth) her skin became hot, her pulse more frequent and quick, with some tension, and her tongue a little furred; she now also complained of some difficulty in passing her urine. From this time her disease, as evidenced by the tongue, skin, pulse, &c. exhibited every mark of *typhus*, until the seventh day, when, with great prostration of strength, her pulse lost all its preternatural frequency, became soft and regular, the skin soft and of a natural temperature; its appearance, however, (which was not naturally very fair) became evidently tinged

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with an unusual yellowness; her eyes were yellow; and blisters, that had been drawn upon her arms, discharged a very yellow serum. In the afternoon of this day her sickness at stomach returned, and she brought up a great quantity of black matter mixed with mucus. In the course of the next day the yellowness rather increased, and she regularly puked the black matter upon taking any thing into the stomach; her dejections also, which had not before exhibited any preternatural appearance, were now as black as soot; her pulse became more frequent, weak, and quick; her mind deranged: subsultus, with which she had been more or less affected from an early stage of her complaint, was now greatly increased, with frequent turns of hiccough. She died on the evening of the tenth day from my first seeing her.

Without making any comment on the above case, I shall only observe, that the patient had not been in town for a considerable time previous to the commencement of our late autumnal fever, nor did she come in till some weeks after the general return of the inhabitants, and the entire extinction of the epidemic. She had been on board no vessel, nor had had communication with any person sick with fever. The respectable family with whom she lived are exceeded by none in respect to neatness and cleanliness about their house, which is situated in a healthy part of Pearl-street; and *she* was remarkable for neatness and attention to her own person. At the time of her being taken sick the earth was locked up by frost, and covered with snow. The matter discharged from her stomach was not exactly like the coffee-ground vomit of yellow fever; it appeared rather like soot mixed with mucus.

The black vomiting could not have been owing to any thing that she had swallowed—she having taken no chalybeates, or any thing else that could have given it that colour; nor could it have originated from a mortification of the stomach, as it was not fetid; nor did the corpse, after death, evince any thing of that kind, it not being any wise particularly offensive.

REVIEW.

ART. I. *The Journal of a Tour into the Territory North-West of the Alleghany Mountains; made in the Spring of the Year 1803. With a Geographical and Historical Account of the State of Ohio. Illustrated with original Maps and Views. By Thaddeus Mason Harris, A. M. Member of the Massachusetts Historical Society. 8vo. pp. 271. Boston. Manning & Loring. 1805.*

A Clergyman who had for some time languished under a wasting sickness, and who travelled for the purpose of restoring himself to health, is the author of the present performance. He journied from Boston to Marietta. But his diary does not begin until he reached Strasburgh, in Pennsylvania, at the eastern foot of the Alleghany Ridge. The journal, therefore, comprehends only that part of his expedition which was performed between Strasburgh and Marietta as he went forth, and between the latter and York (Pennsylvania) as he returned.

The work may be divided into three sections. 1. The journal outwards and homewards. 2. The sketch of the State of Ohio. 3. The appendix of various public papers and maps.

The first of these we perused with an eager expectation of finding something new and interesting; but we are sorry to observe that we have been exceedingly disappointed. The memorandums he has made are probably correct enough as to the route pursued, the qualities of the roads and weather, the distances from stage to stage, and the places of breakfasting, dining, and sleeping. And the delight felt by the author on ascending the mountains, on hearing the roar of water-falls, on beholding the twinkling stars, on listening to the chirping birds, and contemplating the gloomy forests, is, in all likelihood, truly described. But these are not the occurrences upon which a reviewer can dwell with pleasure. He looks for something more than travelling remarks, of so ordinary a sort; and while he admits that it was very proper, and indeed instructive for the traveller to write such notes in his pocket-book for private use, he doubts very much the prudence or usefulness of forming them into a volume for the

public eye. In the present case, though the reading of the journal might have been highly gratifying to the wife and family of Mr. Harris, it is really too full of mere commonplace matter, and too destitute of solid remark, either to instruct the reader or add to the reputation of the author. We would, however, recommend to the publishers of almanacks, an inspection of the itinerary (p. 75) to improve their list of roads leading from Lancaster westward.

We rather doubt the correctness of Mr. H. when he declares (p. 13) that the stone which mostly prevails on the surface of the first mountain he passed after leaving Strasburgh, "is granite, more or less perfect." Other travellers give a different account of the constitution of the Alleghany. And we can scarcely reconcile to the laws of optics, or to physical probability, the height of that summit of the same mountain, from which "a sweep of *hundreds* of miles is visible." We had always understood that the elevation of this, and indeed all the other mountainous ridges, was very moderate, and not to be classed with the Alpine elevations of the globe. But the author, who appears to have been not much accustomed to travelling in places remote from home, and not duly prepared by having studied mineralogy, geology, and the other physical sciences, would, in all likelihood, do better if he should take a second tour. We have so favourable an opinion of his capacity, that we scarcely think he would in that case publish his journal, but rather condense and methodize his observations into distinct sections, essays, or chapters, without the tediousness and repetition of unimportant daily occurrences.

Something of this sort has been attempted by the author in his second part, which is entitled "a geographical and historical account of the State of Ohio." This, which is the best portion of the work, if published by itself, would make a pamphlet of about one hundred and twenty fashionable pages. It is, perhaps, as good a summary of the condition of Ohio at the time the author wrote as any that has been printed. We shall not, however, follow him in his description of the boundaries and extent of the counties and towns of the government, or of Indian wars. These are in our geographical books, and in occasional publications within the State itself and at the seat of the national government. And as to the natural productions, climate, and antiquities, a more ample and satisfactory account can be derived from Michaux's *Flora*, Volney's *Tableau*, and Madison's *Memoir on the*

Ancient Works. So it may be observed, that the delineation of the course of the Ohio has been more recently and correctly made by Ellicot than by Hutchins, whom Mr. H. has followed. There are, however, some discussions about the rivers Muskingum, Hockhocking, Scioto, Great Miami, Grand River, Cayahoga, and the Miami of the Lake, and of the communications and portages between certain of them, which contain good information relative to the inland navigation of those regions. On the mounds and walls of earth which exist in the Western States the author has shown extensive reading, and made a respectable display of erudition; but we are sorry that he has not quoted the excellent memoir of the President of William and Mary college on that curious subject.

In the appendix are re-published various ordinances made by the old Congress, and proceedings under authority of the new, that show the manner in which the settlement northwest of the Ohio began, and by what progressive steps it advanced through the grades of territorial government until it became a member of the union, by the act of the 30th of April, 1802; but as they make no part of the author's travelling observations, we merely mention them.

ART. II. *A View of South-Carolina, as respects her Natural and Civil Concerns.* By John Drayton. Embellished with seven Maps and Plates. 8vo. pp. 254. Charleston. Young. 1802.

IF this description of a growing and respectable Southern State had been noticed by us as early as it deserved, a review of it ought to have been given in one of our former volumes. But as we have heretofore observed, so slow is the progress of the books printed in our country from one city or district to another, that we were not favoured with a sight of Mr. Drayton's volume until a considerable time after it had issued from the press. From that day to this there has been such an incessant supply of other materials, that it has been, much against our inclination, passed by from quarter to quarter. And in a work like our's, which appears but four times a year, it is impossible to notice even our domestic publications with that promptness and celerity that we could wish.

The author has been distinguished before as a traveller, by a tour through the Northern States, and as a statesman, by having been successively Lieutenant-Governor and Governor of South-Carolina. An opinion may hence be deduced favourable to the present publication, in the compilation of which he may be supposed to have possessed all the opportunities of acquiring information which his elevated station afforded. We could wish that this kind of talent and industry was more frequent. Governors of States have much more easy and ample means of obtaining correct knowledge of the country and its affairs within their respective jurisdictions than other persons. Much of their attention, we know, is necessarily occupied in executing their official functions. But one should think it would not be very difficult for an executive magistrate of a liberal education, in addition to all these, and to the exercises of addresses and messages to the legislature, and of proclamations to the people, to compile an highly instructive work on the commonwealth over which he presided. And this might be done so as to gain fame to the author, and respectability to his country, without disclosing any transaction or circumstance which it might be improper to reveal. Before the revolution, we find that Governors Winthrop, Penn, Hutchinson, Pownal, and Colden, distinguished themselves by useful publications. Since that time a Governor of Virginia, and now a gentleman of the same distinguished rank in South-Carolina, have acquired a fair and desirable portion of reputation by the volumes they have respectively written for public instruction. It gives us pleasure to observe in the executive departments of the states and territories of our nation, several other personages, who, if they pleased, could make the most substantial additions to our present stock of information. And with these examples before them, we could wish they would distribute among their fellow citizens with a liberal and generous spirit, the collected treasures of their observation and experience.

Governor Drayton has divided his work into three chapters. The former of these occupies about one-third of the book, and treats of the *physical* department, or, as he terms it, "national concerns" of South-Carolina. The second, which extends to the 174th page, treats of its *rural* and *political* economy. The third occupies the principal remaining part of the volume, and is employed on the historical and "civil concerns" of the State.

Mr. D. relates the discovery of the region by Cabot, towards the close of the fifteenth century; its name given by a French colony in honour of their monarch Charles IX. and by an English one in compliment to their king Charles II. and the grants, boundaries, and geographical situation. He then describes the face of the country, dividing it into the lower, middle, and upper districts. The first includes the swampy and insular tracts near the ocean; the second the pine barrens and sand hills to the falls of the river; and the third the stony, diversified, rocky, and mountainous situations above the rapids. Next he treats of its variable climate, its feverish atmosphere, its destructive hurricanes, its tormenting insects, and its prevailing diseases.

Having proceeded thus far, the author goes on to describe the rivers, streams, and water-courses. The observations on the Santee, Pedee, Savannah, Edisto, and other rivers, evince an intimate acquaintance with them and the lands in their vicinity. Afterwards follows an account of the fossils, minerals, medicinal springs, and cascades in South-Carolina. Among the natural curiosities he has fully described, and illustrated by an engraving, the teeth and bones of elephantine animals dug out of Biggin swamp, in 1795, by Col. Senf, near the head of the west branch of Cooper river, about eight or nine feet under ground; as he has likewise the stratum of enormous oyster-shells extending from Nelson's Ferry on the Santee, S. W. to the Three Runs on the Savannah.

Lastly, Mr. D. gives his readers a botanical catalogue of the more remarkable trees, shrubs, and herbaceous plants which are of spontaneous growth in South-Carolina. This is by far more extensive than we should have expected, if he had not been aided by the researches of Catesby, Garden, Walter, Michaux, and Bartram. Among these we observe the greatest ornaments of the vegetable world; such as the Catalpha, Azalea, Lonicera, *Æsculus*, Andromeda, Kalmia, Liriodendron, Magnolia, Robinia, Lobelia, Acer, and Rhododendron, which, by their elegance or stateliness, characterize the forests of America. To this list he has added another, of the exotic plants which have been naturalized; and among these we observe rice, cotton, tobacco, indigo, maize, pease, long and round potatoes, wheat, rye, barley, buck-wheat, hemp, flax, turnips, gourds, melons, pumpkins, squashes, cucumbers, apples, quinces, pears, plums, apricots, peaches, nectarines, almonds, olives, figs, pomegranates

okra, oranges, lemons, limes, palma christi, pride of India, flowering aloe, Cape Jessamin, and weeping willow.

The animals enumerated by the author are considerably numerous, but he has done little more than mention their names. Of quadrupeds, among which he has placed several of the amphibious reptiles and the fossil elephant, he has named twenty-seven species. His birds amount only to eighty-six kinds, a number far below those which frequent Pennsylvania and New-York, as appears from the *Fragments of Natural History*, &c. which we reviewed in Hex. i. vol. iii. p. 177, and from Mr. Mitchell's list of the birds which frequent the shores of Plandome, printed in our Hex. ii. vol. ii. p. 121.

Seventeen species of serpents are mentioned, thirty species of insects and worms, and between thirty and forty sorts of fishes. It is to be regretted that the zoological part of this work is so deficient. The names of the animals are merely those used in common discourse, and even these vulgar terms are unaccompanied by their scientific synonimes; they are almost wholly destitute of descriptions and illustrations. Their arrangement is exceedingly incorrect; for example, the tortoise is classed among the fishes, the earth-worm among the insects, and the toad and lizard with the deer. Besides these marks of inaccuracy, we have reason to believe that many animals have been wholly omitted, because probably they were not known to the author. On this occasion we think it proper to express our regret that the study of natural history is so much neglected. The seminaries of learning pass over with a too superficial regard those works of creative wisdom which overspread the face of nature; and the consequence very commonly is, that our lettered and graduated youths who have performed the routine of a fashionable education, know scarcely so much of the displays of God's providence around them as their illiterate but sagacious and self-taught brethren of the country, who never entered the vestibule of a college. The lessons of divine instruction with which the fields, the waters, the land, the sea, and the air abound, deserve the most respectful and diligent consideration of man; and happy will be the time when he shall withdraw his attention from the fictitious and artificial discipline of the schools, and become learned and dignified in the lore of nature and experiment.

After this account of Gov. D.'s performance, our readers doubtless feel a desire to peruse a page or two in his own

words. In this we should gratify them, by extracting the section which treats of the climate of South-Carolina, was it not that our space does not permit. We therefore refer them for these particulars to that part of the volume which is contained between the 16th and 27th pages.

It is rather foreign to our purpose to enter into a particular review of the remaining part of this publication. We therefore refer to the original pages such of our readers as wish to know what he has written on the population, military force, tenures, and value of estates, agriculture, manufactures, inland navigation, roads, and commerce of South-Carolina. And to the same authority we recommend them for the author's opinions on the history, government, laws, revenue, civil divisions, cities, towns, religion, charitable societies, literature, modes of living, character, and diversions in that part of America.

The work is illustrated by a map of the State, a plate of the fossil remains of the great unknown quadruped, another of a water machine for cleaning rice, a survey of the canal between Santee and Cooper rivers, a perspective view of the Government-house at Columbia, and a chart of the entrance into Winyaw-bay at George-Town; as also by an appendix of seven explanatory notes. These give to the book additional worth and interest.

ART. III. *The Pennsylvania Farmer; being a Selection from the most approved Treatises on Husbandry, interspersed with Observations and Experiments. By Job Roberts. 12mo. pp. 224. Philadelphia. Johnson & Co. 1804.*

REMARKS, experiments, and opinions on many subjects of tillage, feeding of stock, and the economical management of farms, are brought together in this small volume. But they succeed each other with little order, and are distributed without much regard to method. The writer, as we learn from a passage in page 51 of his book, resides at New-Castle, and is a practical farmer.

He relates various trials of his own upon draining of land, ploughing of fallows, raising of turnips, fatting of sheep; sowing of barley, clover, wheat, and oats; planting of potatoes; turning down buck-wheat for green manure; steeping of seed-grain; the raising of clover, rye-grass, saint-foin,

burnet, timothy; the planting, grafting, and inoculating of trees; and a multitude of other matters between pages 19 and 65, and in other parts of the work. But the chief part consists of articles selected from the *Practical Farmer* of that experienced cultivator Mr. JOHN SPURRIER, of New-Castle county, in Delaware, published in 1793; from the *Essays on Husbandry*, by JUDGE BORDLEY, of Maryland, a highly valuable publication, of which we gave an account in our vol. iii. p. 274; from the *Transactions of the New-York Society for promoting Agriculture, Arts, and Manufactures*, several times noticed with respect in our Review (see vol. iii. p. 389, and vol. iv. p. 57); from the *Transactions of the Connecticut Agricultural Society*; from the *Gleanings on Husbandry*, an English publication, which has been re-printed in this country in 1803; together with some pieces from the newspapers, and anonymous treatises on farriery.

The following extract from page 198 to 215, will give the reader a fair sample of Mr. Roberts's manner of treating the subjects of his work.

“ *Steeps for wheat.*—Steeps are used to render the seed more fruitful; as preservatives against distempers in corn; and to prevent the worm from eating it.

“ *Steep in chamber-ley,* and sprinkle with powdered quick lime: the smut is seldom or never seen where this practice is followed.

“ Take a handful of salt to twelve pints of chamber-ley. It is usual to lay the grain on the barn floor and throw the pickle upon it; whilst, in the meantime, a person is employed in turning it over several times with a shovel, till the whole is wet, when a quantity of newly slackened lime is sprinkled upon it, through a sieve: the wheat is in the meantime turned over and over, until every grain has got a thin covering of lime. This operation is done immediately before the seed is sown; for if the grain thus treated stands over night, there is danger that the limy incrustation will injure it much.

“ Tull relates, that a ship-load of wheat was sunk near Bristol, in autumn, and afterwards, at ebbs, all taken up after it had been soaked in sea-water; but being unfit for the miller, the whole cargo was bought up by farmers, and sown in different places. At the following harvest all the wheat in England happened to be smutty, except the produce of this brined seed, and that was all clear from smut-

tiness. This accident has induced the practice of brining ever since, in most parts of England.

“ *Swine*.—Common lopped-eared swine—the best breed in Berkshire, Wiltshire, and Hampshire: in the last county being principally fed upon acorns and beach mast. The bacon of them is reckoned superior to most others in the kingdom.

“ *Chinese swine*—pointed ears; belly hanging almost to the ground; legs short. They fatten readily; but have generally thick hides; do not bear the cold well; and from their tenderness are apt to hide in stable dung and get the mange.

“ *German swine*—they are of a round form, and pleasing appearance; spotted, black, red, and white: but by experience they have been found unprofitable, because they require a greater proportion of food to fatten them than our old breed; and when fat, are deficient in the weight that might have been expected from their bulk.

“ *Cross breeds*.—The lopped-eared crossed by the Chinese, have produced an improved breed.

“ *Swine* are ready for procreation at from four to six months old; but the male is not accounted as profitable for that use, until eight or nine months old, and is in his prime at eighteen months. The sow goes nominally four months, or one hundred and fifteen days, with very few days variation. They should be restrained to a certain quantity of water, and kept clean and dry; for cleanliness is as essential to the preservation of their health and well-doing as that of any other animal.

“ The cutting away, with a sharp knife, the gristly or horny part of the snout, through which the ring is usually put, will, without the least injury arising from it to the animal, effectually prevent its rooting.

“ *N. B.* It is thought to be the best way to cut the gristly part of the snout loose from one nostril to the other, and let it hang fast at both ends; it will then roll under the snout and more effectually prevent rooting.

“ *Paint*.—Composition for preserving weather-boarding, which is impenetrable to water, and is not injured by the action of the weather, or heat of the sun, which hardens it:

“ Take three parts of air-slacked lime, two of wood ashes, and one of fine sand or sea-coal ashes; sift these through a fine sieve, and add as much linseed oil as will bring it to a consistence for working with a painter’s brush: great care

must be taken to mix it perfectly (it is thought grinding would be an improvement.) Two coats are necessary; the first rather thin, the second as thick as can conveniently be worked. Painting wood before the sap is dry hastens its decay.

“ *Trees.*—It has been observed that foreign trees grow in a greater variety of soils and situations than native trees; each of which has generally a soil and exposure peculiar to it.

“ Transplanted oak, and perhaps some other trees, thrive faster, and produce better timber in the same time, than those which have never been moved.

“ If the tap root of the oak (and probably of some other trees) is cut off, two or three tap roots will generally be formed in its stead, which affords them a better opportunity of finding out the good earth; and in case one of them should be stopped by a stone or otherwise, the others may be more fortunate, which is not the case with a single tap root; and probably this may account for the superiority of transplanted trees.

“ Trees should be planted as they stood before; that is, the side which formerly faced the south to be placed again in the same direction; as a guide, the bark should be marked before the tree is moved.

“ It is to be remarked, that trees put out the longest and strongest root towards the S. W. in order to support them against the most frequent attacks of a S. W. wind; so that when a N. E. storm happens, triple the number of trees are blown down, which fall under as great blasts from the opposite quarter.

“ *Turnip.*—Turnips delight in a light soil, consisting of sand and loam mixed.

“ New seed will come up three days sooner than old—should be frequently changed. Turnips sown between beans are not attacked by the fly. To a quart of turnip-seed add one ounce of brimstone finely powdered, putting both in a bottle large enough to afford room to shake them well together every day for four or five days previous to sowing: keep the bottle well corked. Strew soot on the land when the plants are just come up.

“ Elder boughs, fixed in a harrow, and drawn over the land as soon as the seed is sown, or the plants come up, are accounted useful. Some bruise the bows and fumigate them with burnt tobacco mixed with a small quantity of assa-fetida.

"Want of moisture, and not the fly, has been stated to be the general cause of the failure of turnip crops; and therefore the putting of the seed deeper into the ground than is commonly practised has been recommended.

"For feeding horses: these when fed upon turnips are induced to eat the barn chaff, and other dry food, with a good appetite; are kept healthy, and will work without corn.

"Feeding with turnips makes the horse's coat fine, and cures the grease. In America, attention is wanting to this so very important an article of food to live stock—the great support of the productive powers of the soil.

"*Wheat.*—Smut in wheat may be removed by sinking a vessel that contains the seed beneath the running stream, or under a pump; stirring it briskly with a broom, whereby the balls, if any, of this pernicious substance, will float away, or may be skimmed off; and if there be not any of them, but some of the powder adhering to the seed-wheat, this active stirring, or brushing, will cleanse it from every particle of this infecting matter. The seed will then be in a proper condition for sowing.

"In granaries corn is subject to be destroyed by the weevil, moth, and beetle: frequent screening, stirring, and exposing to draught of wind or fresh air will prevent these insects injuring it, and will destroy their eggs if laid among it. Should this have been neglected, and the insects appear in the winged state, a hen or hens with new hatched chickens, will free it entirely of the insects without feeding, or very sparingly, on the corn.

"It is said that the leaves of pellitory of the wall (an herb so called from growing on walls) will destroy the weevil in corn; and that the smell of lobsters also proves fatal to them.

"When the weevil or moth forsake their food and ascend the walls, they may be exterminated by closing up all the doors and windows of the corn chamber, and filling it with the fumes of brimstone, by leaving it burning on a pan of charcoal, without giving it any vent for twenty-four hours. Great caution, however, must be used to open the windows and doors, and let all the fumes be entirely gone before any body enters the place, for fear of suffocation. The fumes of sulphur are in no wise hurtful to the corn.

"*Plaster.*—At the time that plaster first began to be used in my neighbourhood it was in very little repute with many; and it was generally said, that it would make rich fathers,

but poor sons ; that its tendency would be that of drawing all the salts out of the earth whereon it should be used, and thereby leave the land in so exhausted a state as not to be worth tillage. This in a measure deterred me, and I believe many others, from the use of it, except in very small quantities, and that on some lots that were often manured, that if so small parcels of land should be reduced by it, we could bring them to by manure. But as it did not turn out that in any one instance the land was reduced, as was apprehended, I was encouraged to make more use of it, and have been for these several years in the practice of plastering all the land that I sow with clover or any grass seed. And for the encouragement of those that have not yet been in the practice of using plaster for the purpose of recovering their old worn out lands, I will here describe the effects it had with me on a field of six acres of a very light sandy soil, and so reduced by tillage that the produce would scarcely pay the expense of labour and seed : when left for grass, the produce was nothing but cinquefoil ; and I believe the six acres, when in pasture for a number of years, would not have been sufficient for six sheep through the summer season.

" As the above field was reduced or worn out, I thought I would try the effect of plaster thereon ; being of the opinion that if it did not improve the land, it could not injure it ; for having sown the six acres with oats in the spring 1798, the produce was all conveyed from the field at one load with two horses. The spring following, 1799, I ploughed the same again and sowed oats ; after the oats was up, I sowed four pounds of clover seed and half a bushel of plaster per acre on the field ; the produce was increased to three loads for four horses, instead of one load for two horses ; the clover also made a good appearance, except some small patches that had been killed by the heat of the sun. In the spring 1800, I sowed clover-seed on those spots that were dead, and plastered the field again. The clover this year was very good for such land. I think I could have mowed, at any time from the middle of June till fall, one ton of hay per acre, which I am satisfied was more than that land had produced for twenty years. I collected none of the grass either by mowing or pasturing, but let it lie on the land for manure. In the spring 1801, I plastered again, each year only half a bushel per acre ; the clover as good as the year before, and a good deal of blue grass with it. I let the whole lie on the land and rot as before. In 1802, plastered again as

before. The crop increasing this year, I turned in my cattle to pasture and tread down the grass, but not so as to consume it, except a small part. In 1803, plastered and turned in the cattle as before. In 1804, being the present year, I gave it one bushel of plaster per acre, and have mowed the first crop, which produced of the six acres eight tons of as good hay as ever I remember to have taken in my barn: the latter crop makes a good appearance, but will be left to rot on the land.

“ This land appears at present in so improved a condition, that many farmers, who are accounted good judges, are of opinion, that it would bring as good a crop of wheat as any land I have, without giving any manure, although I have had on land that was well manured these several years from twenty to thirty-five bushels of wheat per acre. I hardly think it would produce so great a crop of wheat, as it has not received any manure whatever, except the plaster and grass thereby produced and suffered to remain on the land to rot; but I believe it would bring a good crop of almost any grain. I think the six acres have improved under the foregoing management, equal to any of my land that hath been manured with barn yard manure or compost, although plentifully supplied therewith.

“ The clover-seed sown thereon, at four pounds per acre, was much too thin; but as the produce was left to rot on the land, the seed falling helped to supply that deficiency, but I think not to as much advantage as if sown thicker.

“ Since I have been in the practice of using plaster, and farming in the method laid down by me in the fore part of this treatise, I am of opinion it has increased the value of my farm to at least double what it was before, (not taking into view the raise of land, from other circumstances).

“ I understand, from persons of good information, that putting plaster on wheat or rye in the fall, after sowing, is attended with surprising advantage in Maryland and Virginia, so as to double the crop of each, and that they roll the seed in plaster, after steeping it in pickle or other steeps, which is also of advantage, but not so much so as sowing the plaster on in the fall. They have tried the plaster on wheat and rye in the spring with little or no benefit, which is agreeable to the experiments I have made; but that it is of great advantage to the grass in bringing it forward soon after the wheat and rye is taken off.

“ *Farm-yard.*—The farm-yard described in the 15th page

of this treatise was on the plan recommended by Spurrier, in the Practical Farmer, as the most approved of by him. Although I have there given the plan, for those that would wish to try the experiment; yet, as it doth not fully meet my idea, I will here describe such a one as I most approve of. I would have the bottom of the farm-yard to be a little descending from the barn, and also to be a small matter descending from the sides, or a small bank raised so as to turn all the water draining from the dung-hill or barn-yard to one point in the lowest place, in which I would have a reservoir to contain all the drainings (except in time of great rains). This reservoir should be eight, ten, or more feet diameter, or in proportion to the size of the yard, and about two feet deep; the top level with the lowest part of the farm-yard; the bottom and sides well clayed, or walled, to prevent the drainings from waste. When full, the farmer should occasionally empty it, either by conveying it on the dung-heap or on the land. This may be done at a very little expense, in the following manner; have a low cart, with a tongue for two horses, made for the purpose by sawing two blocks off the end of a log one foot and an half or two feet over, and six inches thick, for the wheels, with an axletree to unite them; on which place an hogshead with one end open, and one, two, or more holes in the side near the bottom, to be stopped occasionally with plugs, and to be used in this manner for Indian corn, when planted in rows as directed in page 96: as soon as the Indian corn has vegetated, supply the hogshead from the reservoir, and convey it to the field, letting one wheel of the cart pass on each side of the row of corn; then draw one plug, and as the cart goes on, it should be directed so that the liquor from the hogshead should fall on the row of corn; and so continue on supplying the hogshead from the reservoir as occasion may require, till all the corn is supplied. If the same process were repeated in one, two or three weeks, it would be of advantage to the corn. Giving it nourishment in this manner two or even three times would be attended with much less expense than the usual method of putting dung to the hills, as practised by many, and save the manure for other land.

"At other times of the year, when the reservoir is full, it may be returned on the dung heap, by the same cart, and will thereby be of great advantage; or it may be spread on the land, by drawing more of the plugs so as to spread the liquor the width of the cart.

" The reason why I prefer a farm-yard in this manner is this: having for several years had the bottom of the yard in the form of a basin, about eighteen inches deep, I found that the straw and litter that was put in the bottom, and remained always covered with water for ten or eleven months, came out nearly as bright in colour as when put in, and very little rotten; I also observed that the dung above the level of the lowest part of the basin, where the water did not remain on any length of time after rain, was much better fermented; since which I have made the yard as before directed, and find the dung much better prepared for the land."

From the cheap and portable form of this collection of agricultural facts and experiments, from their practical tendency, from the largeness of the print, and from the conciseness and plainness of the tracts or paragraphs, we are inclined to believe it will be serviceable in diffusing information among that most valuable of all classes of men, the cultivators of the earth, and stimulate them to further improvements: for in what region of the habitable globe are there so many incentives to excellent culture, economical management, and complete economy, as in our own, where tythes are unknown, taxes scarcely felt, excises done away, and the greater part of the people, instead of paying rents to landlords, possess freehold or allodial estates? Right willingly then do we join the author in his concluding exhortation to his brethren and fellow citizens, to establish agricultural associations in different parts of the country, for mutual improvement. We quote his words from p. 223.

" The author of this small treatise on agriculture having been induced to publish it at the request of some of his friends and acquaintances who had read the manuscript copy, can only express a hope that some abler pen will publish a selection from different authors, together with the result of such of his own experiments as may tend to the improvement of the present state of agriculture in Pennsylvania and the adjoining States; thereby stimulating the farmer to rescue his profession from that state of languor and decline in which it has been for too many years. He cannot conclude this work better than by suggesting, for the consideration of those public spirited characters engaged in agricultural pursuits, who are anxious to promote the prosperity of the community at large, the propriety of establishing agricultural societies in small districts, in each county in Pennsylvania, who shall meet quarterly, or oftener if need be;

at which time the members ought to communicate the result of such experiments as they had practised upon and found useful; that delegates should be sent by those societies to a general meeting to be held at the seat of justice in each county annually; that the president of each district society should send to the general meeting such of their communications as may be thought proper for their information, who should publish such parts of them as they may think to be of public utility. By thus combining the agricultural interest of each county, the means of information would be diffused, and the farmers, who compose the greatest proportion of the citizens of this State, would, in a cheap and easy manner, be enabled to improve in information in the nature of their pursuits, much to the interest of themselves and the community at large."

ART. IV. *Observations on Phthisis Pulmonalis, and the Use of the Digitalis Purpurea in the Treatment of that Disease; with practical Remarks on the Use of the Tepid Bath.* By Isaac Rand, M. D. A. A. et S. H. Soc. and President of the Massachusetts Medical Society. 8vo. pp. 26. Boston. *Repertory Office.* 1804.

THE contents of this pamphlet appear to have formed the substance of a discourse delivered before the Medical Society of Massachusetts, and published at the request of that respectable body. Although nearly two years have elapsed since the publication, it was only a few weeks ago that we were accidentally favoured with the perusal of it.

The observations on phthisis pulmonalis consist only of such general remarks on the structure and functions of the lungs, and on the frequency and fatality of this disease, as are familiar to all medical readers.

In the treatment of this disease by fox-glove, Dr. Rand goes more into detail, and offers to the public the results of his own experience. This active remedy, like several others of that description, has had the fate of being too much praised and too much condemned. The early, sanguine, and inexperienced advocates of it, from the effects produced in a few cases, which possibly might have been misunderstood, gave their recommendation of its virtues so high a colouring, as to excite unreasonable expectations, and thereby

to hasten its downfall in the public confidence. There is every reason, however, still to believe, that much may be accomplished by this remedy; and the discrimination of the cases in which it may be employed, and of the best modes of exhibiting it, opens a wide field for inquiry and observation.

Notices of the use of this plant may be found in many old books. We are indebted to *Dr. Withering* for our first acquaintance with a safe and advantageous manner of introducing it into practice. Though he treated of it chiefly as a hydragogue, he was not ignorant of its application to the cure of pulmonary consumption, and explicitly expressed his wishes that the inquiry might be further prosecuted. After him, *Dr. Darwin* used it for this purpose; and since, *Dr. Fowler*, *Dr. Drake*, *Dr. Beddoes*, and many others have contributed their observations on the same subject.

As *Dr. Rand* appears to have employed this medicine with a good deal of success, we willingly lay before our readers such extracts as will enable them to possess all the advantages of his experience on the subject.

" Previous to a detail of its effects in this disease, I will endeavour to give some idea of its modus operandi. Notwithstanding many physicians disdain all pretences to theory in medicine, and aver that they depend solely on facts, yet when they are requested to explain their opinion, they always show that their practice is founded on some theory previously adopted. To theorise is to think, and that physician who thinks or theorises the most closely, and reasons analogically on diseases, will, *cæteris paribus*, be the best physician.

" Many years since, *De Haen* in his *Ratio medendi*,* maintained, that the extremities of the arteries, in consequence of certain diseased actions, secreted pus. This opinion has been supported and proved by that accurate and successful anatomist, *John Hunter*.

" Every physician may discover the pus by examining the discharge from the purulent ophthalmia, psorophthalmia of new-born infants, coryza, and in many cases of the pulmonary influenza, when no ulcers exist. The purulent discharge from either of these diseases being mixed with distilled water and vitriolic acid, by agitation, they will form a homogeneous fluid. Then add caustic alkali to the mixture: the acid having a greater affinity to the alkali than to the pus, the pus will separate, and by its greater gravity will sub-

* " *Dr. De Haen*, vol. i. chap. 2, *de Puris Generatione.*

side in the fluid; while the mucus, with which it was blended, will continue to be intimately mixed with water; thus the pus will be detected.

" It is acknowledged that pus confined in a cyst secluded from the air is innocuous, and, except from its gravity and pressure, excites no perturbation in the system.

" The motion of the heart and lungs, although not synchronous, is commensurate with each other; and an accelerated circulation of the blood is attended with a correspondent increased respiration, and a retardation of the circulations with a slower respiration; from whence it follows, that the more the circulations are retarded, the less pus is formed, either by the diseased action of the arteries or by ulcers in the bronchiae; and the less frequent the respiration, that process is retarded and partially suspended, by which it has been ascertained that the pus is aerated by its attraction of oxygen. The digitalis, by its action on the vital powers, promotes two important processes; it promotes the absorption of the pus before it is converted into an ichorous poison by the air, and by lessening the irritability of the heart and arteries, prevents the profuse secretion of pus. Thus these two processes mutually aid each other and prove curative.

" The cautious and continued use of the digitalis will produce these effects, and often render them sufficiently permanent to effect a cure of phthisis pulmonalis.

" These changes, sometimes without any previous sickness of the stomach, will be gradually produced, although a nausea is often excited, and by a peculiar sympathy between the stomach and the heart, the pulse is retarded in consequence of nausea; and as subsequent to the retardation of the action of the heart, absorption frequently occurs. It has been supposed that nausea, a diminution of arterial motion and absorption are mutually and necessarily related to each other.

" The same effects have been attempted to be produced by sailing long sea-voyages, a succession of gentle emetics and swinging have, in many instances, been attended with the happiest effects, as may be seen by consulting Gilchrist on Sea-Voyages, Reid on the Effects of Emetics in Phthisis Pulmonalis, and Carmichael Smith's Essay on Swinging. Each of these remedies, by inducing nausea, vertigo, has powerfully, and sometimes permanently retarded the action of the heart and lungs, promoted absorption, and cured the hectic.

“ Mudge, in his treatise on the catarrh, relates the case of a man, who laboured under phthisis pulmonalis, who expectorated such quantities of pus, with fever, night sweats, and every concomitant of this disease, that death seemed inevitable, as the disease eluded every method of cure. However, after some time, to his surprise, the expectoration lessened, the cough subsided, his appetite and digestion increased, he acquired flesh, and was restored to his usual health. He died some time after of an acute disease, the small-pox. Upon inspecting his thorax, he discovered that the phthisis pulmonalis was cured by the absorption of the whole right lobe of his lungs. One side of his chest was deficient of its lobe, and that part of the trachea to which the lobe appended was closed up. In this case we discover the curative process was conducted and finally accomplished by the absorbents removing the diseased part. The digitalis, had it been employed, might have contributed to their curative exertions.

“ It has been observed, that diseased parts of the body may be removed by depriving them of all supply of blood from the arteries; and it is now known, that where this cannot with safety be attempted to so full extent, on account of the intimate connection between the parts to be removed, and such as we wished should remain, that the same effect may be produced by diminishing to a certain degree the arterial supply of the part; at the same time that we leave the action of the absorbents in full force.” This is the process so completely effected by Mr. J. Hunter’s scientific operation for the cure of the popliteal aneurism, which he suggested from theory, or reasoning a priori.

“ By the same mode of operation of the absorbents, digitalis removes the tubercles in the lungs. When the digitalis has produced a retardation of the pulse and respiration, adequate to our wishes, and is attended with an intermission of the pulse and nausea, its use must be suspended. Upon the suggestion of Dr. Beddoes, I have experienced a partial succedaneum in a strong infusion of camomile flowers, in keeping the pulse depressed.

“ The saturated tincture of digitalis is the preparation which I have used with the most success. The powder made into pills I some time since administered, but I now prefer the tincture, as the dose can be increased or diminished by drops. I never have used the infusion. Previous to the use of the digitalis, if there is any pain in the chest, or an

hæmoptysis; if the pulse is hard, and the respiration difficult, and the patient not advanced in life, venesection will be necessary. A blister should be applied to the side, between the shoulders, or over the sternum, in the course of the mediastinum, and the bowels gently evacuated. The tincture of digitalis may be administered three or four times in a day, beginning with twelve drops, and increasing each dose one drop, till the number of pulsations of the artery is diminished to fifty or sixty, and continued at that number till the disease is removed. I have increased them to an hundred, four times in a day; at night I have generally, when the cough has prevented sleep, given one grain of opium.

“ The haustus salinus in the intermediate time, I have experienced beneficial, co-operating with the general intention of the digitalis; all the neutral salts retard the circulations, and diminish the irritability of the heart, by their action on the stomach.

“ The physician should pay the strictest attention to the state of the pulse, the respiration, the state of the stomach and the appetite. Should it have a very sudden effect in depressing the circulations, and inducing an intermission of the pulse, sickness at the stomach, with languor and faintness, we must immediately suspend the use of it, lest sudden death ensue. The physician should see his patient, at least every day, as few persons are so conversant with the state of the pulse and respiration, as to enable them to judge of the propriety of continuing or suspending the medicine.

“ The diet, as soon as the stomach will admit of it, should consist principally of animal food and wine, and as soon as the expectoration is diminished to two or three ounces in the day, if there is no difficulty in respiration, nor pain in the chest, the bark should be given in decoction, and exercise in a carriage should be used every day.

“ The most decisive good effects have been experienced from the use of digitalis in hæmoptysis, epistaxes, and active hæmorrhages from the uterus. In very urgent cases I have given twenty-five drops every hour till the discharge is suppressed. In one instance of hæmoptysis, in a very athletic young man, where the discharge eluded the force of every other medicine, it reduced the pulse in eight hours, from one hundred in a minute, to fifty pulsations, and stopped the hæmorrhage.

“ While this medicine is employed in active hæmorrhage,

ges, a total abstinence should be enjoined as well from fluids as solids; the most bland, and least irritating fluids in large quantities may, by the distention of the arterial system, protract the haemorrhage. I have given it with complete success in a case of insanity and mental derangement."

Dr. Rand offers the following observations on the usefulness of the tepid bath.

" We shall be less surprised that the people in general have neglected the bath, however salutary in its effects, when physicians themselves are but just emerging from the false analogies of their predecessors, and some of them reverting to unbiassed observation. Physicians and philosophers, reasoning from false analogies, have been induced to think, that the warm bath almost universally debilitates, and that the cold bath strengthens, in the same proportion that it recedes from warm. They have reasoned from the effects of heat upon inanimate substances, and have drawn conclusions from substances that have no affinity with each other; and because cold contracts and hardens inanimate bodies, and heat dilates, elongates and weakens them, therefore heat and cold must operate in a similar manner upon animals. The mechanical physician, being so absorbed in considering man as an hydraulic machine, subject to the same laws, that he forgets the animating principle; and in his reasoning upon the animal functions, does not introduce the vital and sensitive cause. Professor Cullen asserts, and justly, that cold below 62° is sedative and debilitating. However, those who from speculation never use the tepid bath from an apprehension of its debilitating effects, will, when uniform experience convinces them of its corroborating power, I hope, change their opinion. Tissot, in his essay on diseases of literary and sedentary people, and diseases of people of fashion, says, ' That, to persons afflicted with nervous debilitating diseases, the warm or tepid bath, used fasting, is of the greatest utility; ' and adds, ' I have seen three patients, of this class, in a confirmed hectic, whose situation seemed desperate, yet were perfectly cured by this remedy.'

" Would time admit, I should adduce a cloud of evidence in support of the corroborating effects of the warm bath, from the writings of Beddoes, Darwin, Marcard and Franks, who directed the warm bath to weakly, nervous persons, such as, instead of recovering their health, as they actually did, ought to be dissolved all together, if the warmth given to the waters had a relaxing effect.

“ Nothing can more forcibly impress the mind with the invigorating powers of the tepid bath, than its effects on persons labouring under the disease Pelagra, which is exceedingly frequent among the peasantry of Lombardy. This debility cannot be more certainly removed by any means than by the use of the tepid bath. The debility is so great, that many patients are obliged to be carried, although the bath is not above forty paces from the ward. Many who can walk are yet so weak, that they cannot get into the bath without help. The appearance of these people, in going in and coming out, is truly miserable. If they were not supported by the attendants, they would stagger like drunken persons. In the space of four, or, at most, six weeks, which is the usual course of bathing, they are commonly so much restored by the use of the warm bath, as to return to their friends and ordinary employments.* In fine, the warm bath, from 94° to 98°, by diffusing the circulations, and removing partial pressure, prevents spasms, relieves the chronic rheumatism, and most erratic pains; and by cleansing the pores, and determining the circulations to the surface of the body, promotes the secretion of that fine fluid that gives delicate softness and smoothness to the skin, which heighten the charms of youth and beauty; and by its invigorating effects retards the rigidity of the fibres, and the coalescence of the capillary vessels, the harbingers of old age.”

* “ Marcard's Med. and Chirurg. Journal.”

 MEDICAL & PHILOSOPHICAL NEWS.

 DOMESTIC.

Rags imported into the United States from the South of Europe (Leghorn), and their pestilential and venomous Taints overcome by Alkalies.

FOR a long time, even prior to the Revolution, it had been ascertained that paper was one of the articles that could be manufactured to great advantage in these parts of America; and, since that event, the number of mills employed in that business has been greatly increased. Two causes contributed eminently to their success; and these were, the greater demand for paper at home, and the increased duties on it, with the high cost of every thing made of it in Great-Britain. The consumption was so vast in the United States, from the unparalleled circulation of newspapers, the erection of schools in the new settlements, the multiplication of books and pamphlets, in consequence of an increased taste for reading, the employment of paper-hangings in dwelling-houses, and from other causes, that many of the paper-mills were obliged to stand still for want of stock. The domestic supply of rags was insufficient to keep them employed, and at that time the rags of Europe, when imported, were charged with a duty of $12\frac{1}{2}$ per cent. upon their value.

The impediments to the paper-manufacture went on until the year 1802, when memorials were presented to Congress, praying for some additional encouragement. These were ordered to the Committee of Commerce and Manufactures for consideration; and, after various delays, often inseparable from legislative proceedings, their Chairman, Dr. Mitchill, reported in Jan. 1804, that rags of all sorts, that is to say, of linen, cotton, woollen and hempen cloths, ought to be admitted into the United States from foreign places, free from all imposts. Accordingly by the statute, called, "An act for imposing more specific duties, and for levying light money, &c." passed March 27, 1804, it was enacted, that (besides bristles, metallic antimony, unwrought clay, rough bur-stones, and cork-bark), rags of all the before-mentioned sorts should be landed without payment of duties to the government.

Under the beneficial provisions of this act, a new spring has been given to the paper and book manufactures; European rags have been largely imported to furnish stock to the American paper mills, and every domestic maker or consumer of paper, or reader of books, has reason to rejoice at the adoption of so liberal and seasonable a measure. This was the more operative, as the former duties and the additional $2\frac{1}{2}$ for the "Mediterranean fund," was continued upon all imported stationary and books.

It was apprehended that septic, or pestilential matter, might have been engendered in these rags, as they passed from one country to the other, and have been a cause of sickness on ship-board or at the paper mills. But the exporters at Leghorn and other European ports, destroy all contagious and septic matter in these rags, by alkalizing them plentifully before they are packed up for merchandize. The process they undergo is this; first they are washed or rinsed moderately clean, so as to separate the principal part of the filth with which they may have been charged; and this operation is quickened by a solution of barilla or soda. After this they are dipped in lime-water and dried; and, lastly, deterged and charged as they are with the antiseptic salt and anti-contagious earth, they are packed up in bales and exported; and, after such means of prevention, these articles, so likely to turn to fomites and breed mischief, are rendered as harmless as new cloths in the bleach fields. The rags arrive in this condition at New-York, plentifully charged with the exsiccated alkaline powder.

It is thus remarkable that alkaline preventives are employed at this time, in those parts of the world where acid fumigations are extravagantly praised for their powers to destroy contagion. One would suppose that they would be barely exposed to muriate or nitrous vapour, and then packed up for exportation. But whatever the chemists recommend, the men of business act otherwise. And the reason why they alkalize their rags is probably to be found in the regulations of their Health Offices. The rules of the Board of Health at Marseilles, are substantially copied or adopted by all the European governments. That code is regarded by the maritime nations as a complete body of instructions, and to it they refer in most cases that occur, involving the doctrine of supposed contagion lurking in ships, infecting merchandize and poisoning people.

In the 103d chapter of this laboured compilation, alkalies

are classed among the things which are unsusceptible of contagion. But POT-ASH and ROUGH CORAL are carried to the Lazaretto to be aired; while ASHES, SODA, and NATRON, judged to be susceptible in a lower degree, are suffered to remain in the vessel. See *Regemens du Bureau de Sante de Marseille*, p. 207 and 8.

Thus the supreme arbiters of what is pestilential, and what is not, have exonerated alkaline salts, and especially the various forms of *kelp*, *barilla*, and *nitre*, under which soda comes to market, from all suspicion of receiving or transporting contagion. And the common experience of mankind had long before determined the unequalled qualities of these very articles, as detergents, purifiers, and destroyers of that uncleanness which human bodies impart to clothes. The conclusion was therefore obvious, that as even the lowest of the people knew that suds, or the watery solutions of soda, would cleanse rags, and that the health officers pronounced the salt itself wholly unsusceptible of contagion, the safe and ready way for merchants to gain those articles admittance to all the governments of Europe and their colonies, was to cleanse them in the ley, and pack them in alkali. By this method they succeed perfectly; for while the rags are somewhat better bleached for manufacture, and the perspiration and corruption with which they abounded have been removed or rendered inert, the experience of the nations who have followed this salutary practice is evidence in their favour, which well deserves the consideration of the friends to acid fumigations, and as strongly courts the imitation of health officers, merchants, and ship-masters in every part of the world.

United States Military Philosophical Society.

Under the auspices of that scientific officer, Colonel Jonathan Williams, commanding the United States corps of Engineers at West-Point, in the State of New-York, a Military Philosophical Society has been instituted. The President of the United States and the Secretary at War are patrons of this association. The professed design is to collect and preserve the military science which exists among the veterans of the revolution, and among such of their fellow-citizens as have gathered scientific knowledge in the course of their studies and travels. The meetings of the Society are permanently held at the place where the Military Academy of the United States at West-Point assembles.

Among the original members, besides Colonel Williams, are, Decius Wadsworth, William A. Barron, Jared Mansfield, James Wilson, Alexander Macomb, jun. Joseph G. Swift, Simeon M. Levy, Walker K. Armistead, and Joseph G. Totten. And since the establishment of the Society, Messrs. Mitchell, Bayard, and White, of the United States Senate, and many other gentlemen, have been enrolled among the members.

Additions to Michaux's Flora of North-America. In a Letter from Mr. Rafinesque, to Dr. Mitchell, dated Palermo, in Sicily, 8th August, 1805.

"I had the pleasure to write you from Leghorn, and have since safely reached this place, where I am to make a very long stay; there is in it a fine botanical garden, from which, as well as from my botanical tours, I could collect you fine specimens and seeds of Italian and Sicilian plants. I only wish to know whether it will be acceptable, and what you will like best, to show you how willing I am to keep up an useful correspondence with you. It would afford me much pleasure if you would, besides, indicate to me some other means of being useful to you in this part of the world.

"This noted island contains great treasures for botanists, and though I am exploring them with ardour, I do not neglect to work at my American observations; and in a year or two I shall publish at least a supplement to Michaux's Flora, introductory to my natural history of the plants of the United States. I have about double the number of plants that he has, and about twenty new genera that he has not mentioned (of which above a dozen are of mushrooms). The following one was found near Balltown spring, in the State of New-York, by my friend Col. Ths. Forrest, and named by me *Forrestia thyroides*; Cal. 5 part. Pet 5. obovat-plana, Stam. 5. Styli 3. Caps. 1 loc. 3 valv. 3 sperma. Caul. pedalis herbaceus, fol. oppositis petiolatis acutis serratis, glabriusculis, florib. terminalib. thyroideis albis. Col. Forrest, of Germantown, has a specimen of it in his possession.

"Here are the Names of the others:

"*Burshia humilis*, 4^a 4^b; *Shultzia Obolarioides* (Didyn. Angiosperm.); *Isotria Verticillata* (Gyn. Monandria); *Carpanthe Axillaris* (Crypt. filices); *Merasperma dichotoma*, *furcata*, *exigua*, &c. (CRIPT. CONFervae); *Hexorima dichotoma*, *Hex.* 3; *Protanthera phalangioides*, *tenue*, &c. 6^a 3^b.

"Fungi."

"Astrocitum Dimiciatum, Multifidum, Quinquesidum, &c. Hectocerus clavatus, pyriformis, globosus, thamnioides, dichot. &c. Dicaphus Rubens; Acinophora Aurantiaca; Colonnaria truncata, & Urceolaus; Druparia Violacea; Volvaria Coccinea; Epixyla Clavata, lineata, & cylindrica; Pyrisperma hypogea; Tetena rubra & Alba; Priapus Niveus; Gelatina flava, Aurantiaca, Rubra, Candida, &c. Phorima betulina, boletoides, difformis, &c.

"You may make whatever use you choose of the above communication."

Use of volatile Alkali as a Counter-Poison.

Mr. Dubernard, of France, has given an account of the successful treatment of three persons bitten by mad dogs. He describes his method in the following terms: "The wounds were dilated and well washed with a strong solution of sea-salt, and afterwards seared with a red-hot iron. Immediately after, a blistering plaster was applied to each of the wounds. The suppuration was copious, and kept up for a month by gentle epispastics. After the first dressing, the patient was put upon the use of volatile alkali. This he took three times a day, for a fortnight, to the amount of fifteen drops in two ounces of water. After this the dose was altered to twenty drops twice a day, morning and night, and continued until the thirty-fourth day from the accident. It was then discontinued, having never been intermittent but twice during the whole time, and that in the morning, for the purpose of taking mercurial pills. On the forty-fourth day from the bite, the patient went about his usual business."

Another person bitten by the same dog, and not treated according to Mr. Dubernard's plan, died on the 26th day, with all the symptoms of confirmed rabies.

The Medical Society of the department of Gers, where Mr. D. practises, has expressed an opinion on the treatment in the following words: "The treatment employed by Mr. Dubernard is predicated upon correct principles. According to the theory and experience of the best practisers, it is a matter of primary consequence to destroy the hydrophobic virus by the actual cautery. With the same intention he has subjected to a long suppuration, the flesh tainted with the venom, that it may be freed from every vestige of it. But he has not stopped there. His prudence taught him to prescribe inter-

nally the remedies proper to subdue the poison which might have slipped into the channels of the circulation; and by these means, he had enjoyed the satisfaction of seeing the individuals whom he has had under his care entirely preserved from the canine madness."

Paris Journal de Commerce, Aug. 7, 1805.

Evans's Publication on Steam-Enginery.

Among the many inventions which have been made by the Americans, those of a mechanical kind by Mr. Oliver Evans, deserve to be ranked in the first class, both for their ingenuity and their usefulness. Since the publication of his short memoir on the principles of Steam Engines, which we printed in our Hex. ii. vol. ii. p. 317, he has laid before the public a book, on the same subject, under the title of the "Abortion of the Young Steam-Engineer's Guide." This quaint name was assumed by him, because the design he once entertained of publishing a large volume on Steam having unfortunately failed, he offers the present slender performance to his readers, as an abortion. We hope one day to behold the mature birth. The work is divided into eighteen sections and an appendix; the whole of which occupy about one hundred and forty pages of octavo print. It came from the press of Fry and Kammerer, in Philadelphia, in 1805. The principal point which the inventive author endeavours to establish is *the great increase of power in an engine worked by steam, heated to a degree equal to a pressure of one hundred and twenty pounds to the square inch, according to his improvement, beyond the power of engines worked upon the old principle, which did not exceed twelve or fifteen pounds to the inch area of the piston.*

By heating steam to an high degree, and causing it to exert its expansive force under great pressure, Mr. E. shows that much more work can be performed, and with much less consumption of fuel, than in the common mode. This is so remarkably the fact, that by merely doubling the fuel to procure strong steam, he avers, that thirty-two times greater effect is produced than by the old way of construction and working. Nor is this a visionary declaration, for Mr. E.'s machinery has been actually doing all that he tells of it. His engine had been in operation long before he published his treatise. In illustrating the principles of his machine, he has made many striking remarks. Some of these appear to us as original, some are borrowed, but all worthy

of being consulted by artists. His observations on steam, on economy of fuel, on the absorption and evolution of heat, on gaining power by his new method of working, on the construction of boilers, on the application of steam, and on the erection of an engine according to his plan, with his supply pump to feed the boiler, and his condenser to turn the heated vapour back to water, are all tinctured with the spirit of an inventive genius.

The tables of the diameters and strength of boilers; of the heats, strength, and expansion of metals; of the areas of cylinders; of proportioning the cylinder to the boiler; and of the superior cheapness of the new engine; are full of practical detail and experimental instruction. His fifteenth chapter, on the vibrating motions of machinery, is particularly instructive. In short, we have seldom met with a publication more conducive to use and business, and so little encumbered with hypothesis. For although he writes like a sanguine projector in the pages where he treats of moving loaded carriages along turnpike roads, and forcing boats against the current of the Mississippi by steam, yet it is not impossible that they should be realized; and such speculations are quite allowable in a man who has done so much and so well as Mr. Evans.

The reader of the book will find in it a description and plate of the author's newly-invented *Screw-mill*, for breaking gypsum and other hard substances preparatory to pulverization. Also, an account and engraving of Coates's and Evans's *Straw-cutter*; and likewise Clarke's and Evans's *Flour-press*, as well as of Johnson's machine for removing earth. The long appendix, which makes fifty pages of the book, contains chiefly a republication, with some additional matter, of Mr. E.'s controversial papers, taken from the *Medical Repository*, in which they first appeared.

Some Account of the Country and Productions near the Red-River, in Louisiana. In an Extract of a Letter from Dr. John Sibley, to Calvin Jones, M. D. dated Natchitoches, July 10, 1804.

“ The district of Natchitoches contains about three thousand inhabitants, strung mostly along the river, occupying its banks for about sixty miles, in which, till a short time ago, was a Spanish garrison, and now an American one.

“ The inhabitants immediately on the banks of the Mississippi are less sickly than on the large rivers in the Carolinas

and Georgia, probably owing to the immense depth and purity of the river water, which is always cool, and never emits putrid miasma. On Red River it is much the same, with the difference only of the brackishness of its water, from the great number of salt springs, lakes, and creeks with which the country through which it passes abounds; the water of Red River is so salt, that wherever it is stagnant, large cockles, clams, shrimps, &c. resembling those on the sea coast, are found in plenty. At Natchitoches, lime made of cockle shells is plenty, and used altogether, though limestone exists in abundance. Lime, made of shells, is sold at 25 cents a bushel, and a common labourer's wages is 75 cents a day. I have never seen on Red River any fever of the putrid bilious infectious kind, none worse than an intermittent or remittent, that six or eight doses of bark a day, for three or four days after proper evacuants, would cure; though I have found often such a degree of debility, that blistering, and the diffusive stimulus was necessary. Pneumonic complaints carried off a number of persons last winter; they were most fatal among the old people. At Natchitoches there are several instances of longevity. There is a German that has been here fifty years, who is now ninety-five years old, in good health, labours constantly, and can walk thirty miles a day. Several who were born here of between eighty and eighty-five, and upwards of twenty above seventy.

" I have kept this summer an account of the degrees of heat by Fahrenheit's thermometer, hung in a house, surrounded with a piazza, against a plank partition that divides a common hall from a chamber. The fifth of June, at three P. M. it was at 94° ; no other day has been more than 92° , and but few days more than from 84 to 86° . Our nights are always cool. The latitude of Natchitoches I believe to be $32^{\circ} 10'$. Sugar cane grows pretty well here, and sour oranges. I have taken the liberty of enclosing to you some samples of colours which I had made of a wood found on Red River in great plenty; it is sometimes called Saphora; but more commonly in French, Bois d'arc, or Bow-wood; it is used by the Indians for their bows to throw their arrows, and by the French for axe-helves, and handles for other tools; it grows two or three feet in diameter, resembles in colour most exactly the patent yellow, takes a beautiful polish, and, I think, would be highly esteemed by turners and cabinet-makers, particularly for inlaying and fineering; but probably more valuable as a dye-wood. The colours marked

1, 2, and 3, are made by a simple decoction of the wood, only of different degrees of strength, and is the colour of the wood. The other colours I made from the same decoction, by adding a decoction of logwood, blue vitriol, salt of tartar, copperas, or alum; these colours will not wash out nor fade by being washed in strong soap-suds. As the quantity of it on Red River cannot, by exportation, be exhausted, and every particle of it may be used by either the turner, cabinet-maker, or dyer, I have no doubt but in some future time it may be a valuable article of exportation.

"There is between Natchitoches and the sea-shore, at a small creek near the Quelqueshee lake, the skeleton of an animal, which, from the description I have had of it, is the skeleton of a Mammoth. If it is so, it contradicts an opinion that has existed, that these animals have not been in a latitude so far south.

"Should the western limits of Louisiana extend to the river Bravo, or Grande (Great River), the mouth of which is in latitude 26° , the United States will be able to make their own coffee and chocolate, both of which articles grow well in that latitude, and will include a country, particularly at and about Saint Antoine, that in point of beauty and fertility is superior to any part of Europe or America; the surface of the country is neither level nor too hilly, is in perpetual verdure, of the most luxuriant grass; the pastures in summer and winter are equally rich; great proportion of it rich prairies, through which flow the most beautifully limpid streams, meandering over gravel and pebble bottoms.

"The city of Saint Antoine is about 140 years old, is about 500 miles south-westwardly of Natchitoches, and contains about 500 houses, mostly built of white free-stone, situated on a river called Saint Marchus, or Saint Antoine river, and about 180 miles from its mouth, into which it is said there is a good port, about 100 miles below Saint Antoine. On the same river is the town of Laberde, which was first settled in 1662, by Mons. de Salle, a Frenchman. Some of his descendants now live there, and there are French cannon now there which they brought, with the engravings of Louis XIV. on them."

Plague not Contagious.

M. Valentin, of Marseilles, to Dr. Mitchill. "I think it may be agreeable to you to become acquainted with a letter written by the Hospodar of Wallachia, to my friend

De Carro, of Vienna. It was published a few months ago in the *Bibliotheque Britannique*, a French Journal printed at Geneva. That prince is well known to be one of the most learned, polite and liberal men of the present day. What he says on the plague seems to be worth a volume.

“ Sir,

“ I have received the letter you have done me the honour to write me, dated April 7th, together with the work which accompanied it. I have perused the whole, with the lively interest which talents and intrepidity engaged in the cause of humanity never fail to inspire. After having given so striking an instance of your confidence in the Cow-pock, it was well worthy of the extent of your ideas, to seek a preservative against one of the greatest scourges of the earth. But you know, Sir, that I belong to a country where it is but too easy to make observations on the plague. I have seen this capricious disease assume all forms, and exhibit the most opposite symptoms. It has frequently appeared under the guise of an *inflammatory fever*, and then suddenly disclosing all the peculiar symptoms, so that the most experienced physicians have been strangely deceived in prescribing blood-letting, which has produced the most fatal effects. Sometimes it commences its career by an *inflammation of the stomach*, accompanied by signs of a septic ferment, which infects the whole alimentary canal, attacks the nervous system, and assumes the character of a deadly malignity. Other persons seized by the disease, have had no other symptoms than those of uneasiness and surprising weakness in all the joints, so that the physician could consider it only as a *slow fever, invading the whole nervous system*. From this proteiform variety of symptoms, we are to suppose that the pestilential miasmata, introduced into the mass of humours, incorporate with them, and excite symptoms corresponding to the peculiarity of constitution in the sick; and that we are to reject a remedy which promises uniformly either to prevent this distemper, or to cure it.

“ Mr. Valli,* on his passage through Bucharest, owned to me, that his experiments with cow-pock had taught him nothing. And the notion of guarding against the plague

“ Dr. Valli returned from Constantinople to Italy. This is the man who inoculated himself for the plague, and who shut himself up in a pestiferous hospital at Constantinople. All the hopes he once entertained of preventing the plague by vaccination are vanished.”

by inoculating with its own poison, promises still less success, because it is very common to see people who have been cured of it ten times die on the eleventh.

“ Shall I give you, Sir, an instance of the whimsicality of this disease? The Imans practise charity with the most religious zeal. We observe some of them, who, after having washed, rubbed and buried thousands of those whom the plague has killed, without experiencing the smallest inconvenience, are attacked and overwhelmed at times when they are least exposed to the supposed exciting cause. My opinion, therefore, is, that in the present state of our knowledge, the best thing we can do in this respect is to establish hospitals, over which men of your merit cannot be too vigilant, for the purpose of recommending proper discipline to governments. I have the honour to be, &c.

“ CONSTANTIN YPSILANDY.”

Another Account of Black Grass. (See *Med. Rep. Hex. i. vol. vi. p. 321, and Hex. ii. vol. ii. p. 101.*)

In Dodsley’s Annual Register for 1766, p. 157, is the following paragraph, which seems worthy of re-publication:—
“ A valuable discovery was made some years ago at Saybrook, in a cove at the mouth of the Connecticut, of a grass that, from the dark colour of its capsulæ, has obtained the name of black grass; of which the ingenious Mr. B. Gale, at the request of Peter Collinson, Esq. has lately made public the natural history. Black-grass was first discovered near an old raft drifted down the river, and lodged in the above cove or arm of the salt-marsh, from whence it spread spontaneously from the seed that was wafted about by the spring-tides. Its early growth, lively green, and great increase, with the preference given to it by cattle, encouraged many attempts to propagate it, but it proved very uncertain in its vegetation, except in soils that most favoured it.”

More Native Gold found in the Southern States.

Gold continues to be picked up in the sands and soil of North-Carolina. And it appears to be more extensively diffused than was originally supposed. A journey and survey of the auriferous region was taken during the summer of 1805, by William Thornton, M. D. of Washington. This gentleman has purchased thirty thousand acres of the land in the neighbourhood of Reed’s farm, in Cabarrus county, where the first parcels of this precious metal were found. Under a persuasion that the tract contains a great quantity of gold,

he has published proposals for forming an association, under the name of the "North-Carolina Gold-mine Company." This is to consist of eleven hundred shares, of one hundred dollars each; which sum, when paid to the agent, will be followed by a deed of conveyance, to certain persons in trust for the company. They are then to get themselves incorporated, to search for gold, and manage their common concerns. Gold has also been collected in small quantity near Lynchburg, on the upper part of James-river, in Virginia. (See Med. Repos. Hex. ii. vol. i. p. 307, and vol. ii. p. 439.)

Pot Ash employed in Diet by the Creek Indians.

In the preparation of their maize, the American natives have manifested considerable skill and variety. The principal modes, however, have been pounding it into *hommine* and *grits*, parching it, and reducing it to meal, and soaking it in alkaline ley until the skin or hull is separated, and the grain softened.

There is, as Colonel Hawkins relates, a further process in the cooking of their corn, which, though daily practised, is not generally known to the whites. This is the admixture of certain portions of ley made from the ashes of the hearth with *hommine*, or pounded maize, while it is boiling. The mode in which this is done by the women among the Creeks, is as follows: They put a parcel of wood-ashes into a sort of vessel, made after the manner of a basket or sieve, with apertures of moderate size in the bottom. Upon this they pour water, which, soaking through, and dissolving the pot-ash as it passes, is received into a pot or pan placed below. A quantity of this is commonly kept on hand for occasional use.

When they cook their corn in water for food, they generally add to the two ingredients, a pint, a quart, or some other measure of ley from the vessel in which it is standing. The proportion of alkali is determined by the quantity of corn, the strength of the ley, and other circumstances. And this material they steadily employ in the preparation of their maize, preferring it to sea-salt, which they have in any quantity they want.

This preference is founded in a conviction of the beneficial operation of the alkali, in softening the corn as it boils, in rendering it agreeable to the palate, and in disposing it to undergo easy concoction in the stomach.

It is related upon the authority of Colonel Hawkins, the superintendant of the affairs of that people, that a diet of

maize, alkalized in the manner just described, is better adapted than any he knows to the cure of syphilis. When the Indians are suffering the venereal disease, they recover sooner under a course of this kind of food, joined to the ordinary remedies, than in any other known mode.

Among the Chicasahs and Cherokees there is a kind of grass growing on the sands, and of weed found in the Tennessee and other rivers, which, when burned to ashes, afford a saline substance, that is employed instead of sea-salt. And for culinary purposes the women prepare it in sufficient quantity, and of a pearly whiteness.

Singular Case of Obesity: In a Letter from Dr. Aaron C. Willey, dated May 11, 1803.

When this singular child was born, May 15, 1802, I perceived nothing in it different from other infants. It fell no more under my notice till this spring, when the popular reports of its extraordinary bulk induced me to visit it, in order to examine the phenomenon myself. I found the truth had not been exaggerated. The following are the dimensions as taken on the 19th of last month.

	Inches.
Circumference of the ankle,	7.5
of the leg,	11.8
of the knee,	11.9
of the thigh,	18.0
of the wrist, or rather at the inferior articulation of the radius and ulna,	6.6
at the umbilical region,	28.1
Length, from the vertex of the head, to the great protuberance of the <i>os calcis</i> ,	29.5
Weight, inclusive of the clothes, which were extremely light,	43.25 lb.

The child is a male, with blue eyes, and hair uncommonly coarse. From what can be discovered at this infantile period, it is born heir to mental imbecility. It has always enjoyed an usual degree of health.

This is a curious fact in physiology; a fact worthy the attention of the inquiring mind. What are the peculiar circumstances or powers of the animal economy that have so wonderfully favoured the evolution and combination of the constituent principles of cellular fat, I submit to the learned investigators of organic life.

Efficacy of Poke-Root.

Nathan Crawford, of Columbia County, (Georgia), has communicated to the Editors, the following remarkable case, in a letter, dated April 10, 1803. "In the year 1797, a young woman, twelve years old, was bitten by a dog in canine madness. About twelve months afterwards she complained of much distress, and said she was 'going mad.' Her hands and feet were cold and clammy, and her countenance quite pale. Her fits came on regularly twice in twenty-four hours, and lasted about one hour each time. If cats or dogs, to which she had an utter abhorrence, came in her sight, they never failed to bring on the fits. In the fits she had a prodigious strength; so that three people were required to keep her in the house. It did not appear she had that aversion to fluids that is common. She had been so ill, that her friends had made her a coffin, when a travelling man prescribed as much poke-root (*Phytolacca decandra*), rubbed into a powder, as would lay on the point of a case-knife, infused into a gill of new milk, which dose was to be repeated three times a day. She found an alleviation of the symptoms after a day or two, and, by continuing the medicine, she was restored to perfect health, and has continued free from any symptoms of it ever since. It appears to me the above case confirms Dr. Mease's theory of this terrible distemper more than any thing I have heard of. It shows the strong analogy between hydrophobia and tetanus. The poke-root had an operation on her stomach and bowels, analogous to the operation of the tincture of cantharides given to the tetanic patient by Dr. Brown, of Kentucky. I am sorry that I can bring no proofs of the efficacy of the poke-root in addition to the above, but have sent it forward, hoping it may prove beneficial to our fellow mortals in similar situations."

Williams's Survey of New-York Harbour.

A survey of the harbour, bay and narrows of New-York has been made, pursuant to an order of General Dearborn, the Secretary of the War Department, by Colonel Jonathan Williams, of the corps of engineers, and a chart of the survey has been correctly drawn by Captain Alexander Macomb. From this it appears, that the distance from the shore of Signal-Hill, on the east side of Staten-Island, to the western termination of Long-Island, near Denyse's, straight across the Narrows, is 2000 yards; and the greatest depth

of water at this passage 16 fathoms. It also appears that the distance from the ferry at Powles-Hook to Governor's Island is 3270 yards; and the greatest depth of water, 14 fathoms. The passage between Governor's-Island and Long-Island, formerly called Butter-milk channel, and within the memory of man, both narrow and shallow, is now eight fathoms deep. The distance from Whitehall slip to the wharf on Governor's-Island, is 300 yards.

The edges of the shoals or flats, beginning at Oakley-point, on the Jersey side, a little north of the mouth of the Kills, running off so as to comprehend Robbins's-reef, stretching thence along by Bedlow's and Ellis's Islands, and extending to the city of Jersey, on Powles-Hook, are very well delineated; also the margin of the shoal reaching from Yellow-hook to Red-hook, across Guanas-cove, on the Long-Island shore, is strongly marked.

The whole is done with a view to aid engineers, in devising methods of defence for the city against the fleet of an enemy; and it may be pronounced with safety, an excellent performance for conveying the requisite information.

Plan of the Charleston Dispensary.

The want of a public Dispensary, for the supply of medical assistance to the poor, had been long felt in Charleston. Though there was a well-regulated poor-house, where sick persons, who are totally destitute of support, found an asylum from want, and a physician for their relief; there was a class of people, in that as in every city, whose situation, when in health, placed them above want, but who, nevertheless, when attacked by sickness, are unable to pay for medical assistance. In health, they are competent to the support of themselves and their families; in sickness, probably they can procure the little comforts which they may want, and yet be unable to pay for regular advice.

The Medical Society of South-Carolina, viewing the situation of these unhappy persons, offered to the City-council the services of its members, without remuneration, on condition that the Council would supply the medicines. In 1802 this offer was accepted, and an act was passed for the establishment of the Charleston Dispensary, and appropriating one thousand dollars annually, for the supplies of medicines and other conveniences. The Council annually elect a Commissioner or Trustee, out of thirteen wards of the city, to superintend the Institution, grant tickets of admission, and

manage the affairs of the Dispensary. The Medical Society elected two of their members to be consulting physicians, and several others voluntarily offered their services as attending physicians. On the first of May, 1802, the institution was opened. The physicians, on entering upon their functions, with great liberality, announced to the public, that in addition to medicine and advice, professional aid would be freely given to poor women during pregnancy and in labour; and also to strangers and others, for the best method of avoiding the diseases incidental to the climate.

A body of judicious regulations has been adopted; and an idea of the extent and excellence of this benevolent institution may be formed from the consideration, that from the 1st of May, 1802, to the 30th of April, 1805, inclusive, the whole number of persons to whom its benefits were extended, amounted to 552; of whom 25 were removed to the poor-house, 6 left the city, 24 were discharged for disorderly conduct, 2 were dismissed as incurable, 69 died, and 426 were cured.

Botanical Garden at Charleston, (South Carolina.)

By the exertions of the Medical Society of Charleston, aided by the zeal of several spirited gentlemen not members of that institution, land has been procured for a Botanical Garden, and funds provided for its support. South-Carolina has lately been distinguished for the liberal endowment of its College in Columbia; and now deserves respectful mention for the efforts it is making to improve this useful and elegant branch of natural history. The design of the managers is fully expressed in the following letter from James Simons, Esq. the Chairman of the Standing Committee, to Dr. Mitchill, dated at the Botanical Garden, South-Carolina, near Charleston, 16th August, 1805. (Circular)

“ It affords us very considerable pleasure to be able to announce to you, and to every lover of science, the establishment of a Botanic Garden in this place. The situation of our State, so near the tropic, induces us to believe, that we possess many advantages, for the cultivation of exotics, which more northerly climes are deprived of; and we, therefore, flatter ourselves with the pleasing prospect of being able to effect, with the assistance of our friends abroad, a very handsome, as well as useful and extensive public establishment, for the diffusion of botanic knowledge.

"Our first concern will be the examination and arrangement of our indigenous plants, among which there are, doubtless, many non-descripts. To extend the knowledge of our favourite pursuit, and to enlarge the field for botanic researches, we beg leave to propose to you an exchange of our indigenous plants, and of such exotics as the one can procure and the other may want.

"We solicit for ourselves, and our infant establishment, your friendship and assistance; and the more so, as a reciprocity of good offices will not only secure to us individual esteem, but will, at the same time, contribute to perfect the science, to which we are mutually attached."

The following circular is delivered at the Custom-House, to masters of vessels, bound upon foreign voyages. It is from Mr. Simons to the Commanders.

"Sir,

"Gentlemen of your profession have it much in your power to assist us in the completion of the Botanic Garden in this place, which is just established. In the pursuits of commerce you visit every clime, and are, therefore, enabled to enrich our common country with many vegetable productions, both rare and valuable.

"We, therefore, take the liberty of soliciting you to procure for us such plants, or the seeds of such plants as are natives of foreign countries. And we also request you to procure the names, properties, and uses of such plants, where they are known, the qualities of the soil in which they grow, or any other circumstance, connected with their cultivation or use.

Living vegetables may be transported in boxes, in preference to pots, and placed in such a situation as will secure them from the salt spray, but, at the same time, not to exclude them from the air; small trees and shrubs, without foliage, may be enclosed in mats, with a little earth surrounding their roots; and the seeds of plants are best preserved in common dry brown sugar, enclosed in a jar, and sealed over; or they may be put into small paper bags, and tied up, which may, afterwards, be covered over with varnish, or be immersed in melted wax, and kept in a dry and airy part of the ship. Any other mode may be adopted for their preservation, which enlightened foreigners may point out.

"Any expense which may accrue will be cheerfully refunded."

From this association, their fellow citizens and the public have much to expect. For although the region around them has been explored by *Catesby*, *Garden*, *Walther*, and *Michaux*, there can be no doubt that much additional work remains. And the collection of the known species themselves into a *Hortus*, is an excellent undertaking.

Extensive Layers of Marine Shells found in Georgia and the Mississippi Territory.

David Meriwether, Esq. has possessed and exhibite shells of oysters and snails (*Helix*), which were found on the large plain described by Mr. W. Bartram in his travels, p. 397. This plain is one hundred and fifty miles on a straight line from the nearest part of the ocean. From the place near the Savannah and Ogeechee rivers, where these exuviae of the ocean are found, there have been discovered other strata of shells, principally of the oyster, in a course nearly due west, close by the Flint-river. In digging wells between the Savannah and Flint-rivers, these animal relicks have been found in various places, at about the depth of thirty feet. According to the information of Col. Hawkins, this stratum of shells, stretching from East to West, crosses the Flint-river twelve or fifteen miles below his settlement. Information has been received of their existence on the banks of the Alabama; and from other facts and relations, there is reason to believe that there is a continued layer of them in the same direction quite across the country to the Mississippi.

Echini, or the shells of sea-urchins, of a peculiar shape and configuration, have been taken out of a spring in Washington county. The water of this spring runs into the Oconee. Each of these echini is about the size of a thin small biscuit. It is marked on the upper side with five regular impressions of four rays each; resembling a pretty butter print. It is considerably convex above, and somewhat concave beneath. Bushels of these remnants of echini have been taken out of this spring, and all of them so nearly alike, that they almost appear to have been formed in the same mould.

Assize of Bread in New-York.

In New-York, the Common Council of the city possess, by their charter, the right to lay and fix assizes upon provisions brought to market. In former days this power was

carried so far as to extend to butcher's meat and many other things. But latterly it has been restricted to the article of bread alone. Whether this interference of public authority is useful and proper, has been a subject of doubt among considerate men. All that is intended at present is to give the rule whereby the assize is calculated in the city of New-York.

A barrel of flour, weighing one hundred and three quarters, or one hundred and ninety-six pounds, is found to gain fifty-six pounds on being manufactured into bread. This makes a quantity of bread weighing two hundred and one quarter, or two hundred and fifty-two pounds. And this additional weight is derived from the water, yeast, salt, leaven, and other ingredients mingled with the flour. If two hundred and fifty-two be multiplied by sixteen, the number of avoirdupois ounces in a pound, it demonstrates that a lawful barrel of flour will furnish four thousand and thirty-two ounces of bread.

The weight being thus ascertained, the next point for consideration is, what allowance ought to be made to the Baker, in addition to the gain of weight, for his skill, expense, and labour in the manufacture. The Common Council have calculated that three dollars and fifty cents are a reasonable compensation, and afford a sufficient profit for converting a barrel of flour into bread.

If now to three hundred and fifty cents, (or twenty-eight shillings of New-York currency, by which a dollar passes for eight shillings) there be added the price of a barrel of flour, and the sum of the two be reduced to York shillings, there will be found a divisor, which, acting upon the dividend, four thousand and thirty-two, gives a quotient that expresses the weight in ounces and parts of ounces, of a loaf of bread, which shall be sold for a shilling: Thus,

Allow for the profit of converting a barrel of flour into bread } £ 1 8 New-York cur.

Price of a barrel of flour (supposed) 2 16

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Showing that when flour sells at seven dollars a barrel, the assize of bread shall be fixed at forty-eight ounces, or three pounds weight, for (one eighth of a dollar or) one York shilling. And according to this rule, the assize of bread shall vary weekly, or from time to time, with the varying price of flour.

Randall's Foundation of an Asylum for meritorious old Seamen.

In the year 1801, Captain Robert Richard Randall, of New-York, died, and, by his testament, ordered that his estate, lying in the eighth ward of the city, should be vested in the hands of trustees, for the purpose of founding an Hospital for the support of fifty aged and deserving mariners. The estate, at the time of Mr. Randall's death, was estimated to be worth \$ 35,000. Its value has, since that time, been very much increased by the growth of the city and the corresponding rise of property. The testator has directed that the income and proceeds should be kept in an accumulating progress, until they should amount to a sum sufficiently large to put the Institution fairly into operation. This asylum he has directed to be called, the "SAILOR'S SNUG HARBOUR." Thus, by the liberal spirit of an individual, feeling for the sufferings of sea-faring people, is a provision made, which, by discreet management, may be expected in due time, to become a lasting monument of the generosity of the donor, a public establishment honourable to the city in which he has directed it to be formed, and a comfortable birth for a part of our seamen who outlive the ability to provide for themselves. By a statute of the legislature, passed sixth of February, 1806, the trustees were incorporated by the name of the "Trustees of the SAILOR'S SNUG HARBOUR in the city of New-York."

Botanical Garden at New-York.

In the year 1792, a Professorship of Botany was established in Columbia College, at New-York. The gentleman appointed to perform the services was Richard S. Kissam, M. D. But although his education and talents encouraged the highest expectations, he declined to act. In consequence of this, Lectures on Botany were regularly delivered, for several years, by Dr. Mitchill, then the Professor of Chemistry. In 1796, David Hosack, M. D. was appointed Professor of Botany, on Dr. Mitchill's consenting to

discontinue that branch of tuition in his favour. Shortly after, the public sustained a great loss by the death of Dr. William Pitt Smith, then Health-Officer of the port, and Professor of *Materia Medica* in the College. On this affecting occasion, the Professorship of *Materia Medica* was consolidated with that of Botany, and the two were united in the same Professor.

Since that time the Professor of Botany and *Materia Medica* has manifested a warm and lively desire to promote the knowledge of vegetables. For this purpose, he has endeavoured to excite his fellow-citizens to patronize a garden for the cultivation of plants for scientific purposes, and a library, to consist of publications on this delightful branch of natural history. But finding them tardy in the promotion of so ornamental and useful a work, he undertook the arduous task of establishing a Botanical Garden and Library on his own account, and by his own efforts.

He accordingly procured a beautiful and extensive collection of botanical books, and he obtained from the Common Council, a lot of land, about three miles from the city. On this piece of ground, which is several acres in extent, the Professor has made many improvements. Besides enclosing, levelling, clearing, and draining it, he has erected upon it a green-house, collected exotic and indigenous plants, employed a gardener, and put the greater part of it under promising cultivation.

Preparation of Sulphate of Pot-Ash in New-York.

In the manufacture of the vegetable fixed alkali from wood ashes in New-York, there are often experienced both embarrassment and loss from the presence of a portion of sulphuric acid, which, uniting with a portion of the pot-ash, turns it to vitriolated tartar. The following extract of a letter, dated June 23, 1805, from Jesse Hawley, Esq. of Geneva, (New-York) to Dr. Mitchill, contains some valuable information on the adulteration of pot-ash by this neutral salt, and on the mode of separating it:—

“ Mr. Alexander M‘Nitt, near this place, has, after several years experience, devised means of separating and collecting the sulphate of pot-ash during the process of boiling the ley.

“ He considers it an improvement in the manufactory of that article, of so much consequence, that he has been induced lately to apply to the Secretary of State of the United States for a patent, which probably is now under his consideration.

" The advantages which he has found to be derived from the improvement, are,

" 1stly. The improvement of the quality of the alkali by the separation of the sulphate.

" 2dly. By cleansing the kettle and the leys of the sulphate, the salts melt down in from one to two hours, when otherwise it will require from one to six hours, according to the quality of the ashes,* which greatly saves the kettle from the exposure of cracking by the intense heat required to melt foul ashes; also saves much wood and time spent in excessive labour. Through want of the knowledge of this process and separation, the pot-ashes are often clouded with a dark and dirty complexion and sediment; and, probably, from this circumstance alone, there have been large quantities condemned at New-York to second and third sorts. Could we materially improve the quality, it is probable we should improve the character and price of the American pot-ashes.

" 3dly. The collection of a drug more valuable than the alkali, which may be obtained nearly in the proportion of a hundred weight to every ton of pot-ash. (For further information on the manufacture of pot-ash, see Med. Repos. Hex. i. vol. iv. p. 189 and 417, vol. v. p. 81 and 195, vol. vi. p. 86 and 365, Hex. ii. vol. i. p. 82 and 304.)

" It would materially enhance the value of the improvement to find a good market for all the vitriolated tartar which could be produced by the process.

" It appears this country will not afford a sufficient market for that purpose, nor for all the chemical mutations of it."

A living Tortoise found in the Centre of a Rock.

In the year 1802, a living tortoise was discovered in the solid part of a stratum of rock, at the village of Newburgh, seventy miles north of the city of New-York. This town is about sixteen miles from the places where the mammoth skeletons were dug up by Mr. Peale. This amphibious creature was released from his cell by a blast of gun-powder, employed to perforate the rocky layer, in digging a well. The person engaged in this job was Mr. Anderson, and the gentleman for whom he was penetrating the earth, was the late John Dewint, Esq.

Mr. Anderson related, that on descending twelve feet through loose earth, he was opposed by a fixed stratum of

* Field, and all old ashes abound with the neutral salts of the sulphate.

rock. This is one of the most thick and compact kinds of shistus. He worked his way downwards by aid of gunpowder for about six feet; where, after an explosion, a small tortoise was found alive in the hole. It was as tender as a soft egg, when first picked up; but soon became harder by exposure to the air, and since its death by soaking in alkohol. It is about the size of a dollar, or rather larger; it lived to the third day, and might possibly have continued alive to the present time, but was killed by immersion in distilled spirits, in order to preserve it.

There was no trace of water discovered in the rock, amidst which this tortoise might have lived. And the gunpowder had shivered the stratum so much, that the precise cavity in which the creature had been immured could not be detected. But nobody present entertained a doubt of its having been dislodged from the rock by gunpowder.

The animal, which is in perfect preservation, is the *snapper*, or *testudo ferox*: and by the politeness of the Hon. D. C. Verplanck, of Fishkill, who preserved it, has been put into Dr. Mitchill's possession.—Instances have been frequent of living toads disclosed from their rocky caverns; but examples of living tortoises brought to light, water, and air by the disruption of rocks, are much more uncommon.

Poisonous Effects of the Effluvia of Sumach on a Swarm of Bees: Communicated by James Somerville, Esq. of Westchester County, to Dr. Miller.

Supposing that the qualities of plants and their effects on animal life are generally interesting, and that any new facts concerning them will be acceptable to you, I am induced to communicate the following fact concerning the *rhus vernix*, Linn. commonly called *swamp-sumach*, from a memorandum I made at the time of the occurrence, but which had been mislaid or neglected till our late conversation on that subject led me to look it up.

On the 21st of last June a neighbour of mine had a swarm of bees, which he found attached to a branch of the above-mentioned shrub. A box made of common pine was put over them in the usual manner; to effect which, a bench was placed near, and the branch bent down to it, and in part cut off; this was at 3 o'clock in the afternoon; about 9 o'clock the same evening they were removed to the place where it was intended they should remain; next morning, about 5 o'clock, they were all found *dead*, with very few ex-

ceptions, and these in a state of torpor and extreme debility, which, in a short time after being exposed to the fresh air, ended also in death. They appeared much swelled beyond the ordinary size, perhaps a third; their colour uncommonly black. The swarm was the first for the season from that stock, and seemed to be a very large one. The box was inspected and found to be free from any thing of an offensive or noxious nature, and has since been used for another swarm.

The deleterious qualities of this plant have been frequently experienced by an incautious approach to it in its growing state; and also when used as fuel along with other wood, it emits a smoke very injurious; but I have never known so strong an instance of its power as that above related, being equal to sulphur in its effects on the bees.

From what is known of this plant and some others, the wonders related of the Bohun-upas, of Java, are rendered somewhat less incredible; and perhaps are only an account of facts exaggerated by the oriental manner of description.

Sicilian Quarantines and French Acid Fumigations.

Mr. Rafinesque writes thus concerning the quarantines to which vessels of the United States are subjected in Sicily, in his letter from Palermo, of February 25, 1806: "I thank you for your information concerning the yellow fever of New-York, on which my opinion perfectly coincides with yours. Capt. Bennet, the bearer of yours and of this letter, is another example of the wrong policy of your government, which has led this and others in these parts to put the American trade under the greatest embarrassments. On hearing of the last yellow fever of New-York, it was decided that no vessel from that city, or within one hundred and fifty miles of it, should be admitted to practick in Sicily. And it is by particular favour that Capt. B. has been permitted to land and load in quarantine."

D. B. Warden, Esq. secretary to the American legation in France, informs, in his letter from Paris of the 2d April, 1806, that Professor Dumeril had declared his conviction of the uselessness of acid fumigations to destroy contagion. That distinguished gentleman is one of the commissioners who were sent by the French government to Spain to inquire into the nature of the yellow fever which has lately been epidemic there.—Professor D. teaches anatomy and some branches of natural history in the college of France. He has lately published a work entitled, *Zoologie Analytique*,

or a novel and natural method for the classification of animals. He has not, like Linnaeus, and other celebrated naturalists, taken the characters from one and the same part, but from several or all the organs and functions. His classification of insects is his own, and is the fruit of many years study. He is publishing a second edition of his *Elements of Natural History*, which was composed by order of the government for the use of students.

This same Mr. Dumeril assured another of our correspondents in France, "that acid fumigations performed in Spain, according to the Guytonian method, had been fruitless, and more troublesome than serviceable. Many houses which had been fumigated by way of prevention, and before the fever appeared in them, were actually more sickly and crowded with patients than others. When the acid gases were extricated in the chambers of the sick after the distemper had broke out, they showed no efficacy whatever in restraining or destroying it sooner than elsewhere; and that, in that quarter, the triumph of the Mitchillians seemed to be certain." To this may be added the total failure of the oxygenated muriatic acid gas to do any good during the prevalence of the yellow fever at New-York, in 1805, though abundantly extricated in many places from bottles of Parisian manufacture.

Medical Commencement at Philadelphia.

At a medical commencement held in the University of Pennsylvania on the 21st of April, 1806, the following gentlemen were admitted to the degree of Doctor of Medicine, after having presented and defended Inaugural Dissertations on the subjects annexed respectively to their names.

WILLIAM P. DEWEES—On the means of lessening Pain and facilitating Parturition.

JOHN FLOYD—Inquiry into the Medical Properties of the *Magnolia Tripetala*, and *M. Acuminata*.

RICHARD W. HALL—On the Use of Electricity in Medicine.

EDWIN L. M'CALL—On the mutual Subservience of the different Parts of the Body.

JOSEPH BLOODGOOD—On *Hæmoptysis*.

JACOB DAVID WACKER—On *Hydrocephalus Internus*.

CHARLES COCKE—On the Identity of *Gout* and *Rheumatism*.

ENOCH A. GAEEN—On the *Lumbricus Terrestris*.

JOHN HENRY M'FARLANE—On Angina Pectoris.
 WRIGHT TUCKER, jun.—On the Operation of Cold.
 DEVEREUX J. CLAIBORNE—On the Use of artificial Drains.
 WILLIAM H. SIMMONS —On Contusions of the Head.
 BENJAMIN W. DUDLEY—On the Medical Topography of Lexington (Kentucky), and its Vicinity.
 LEWIS CREAGER—On the Dysentery.
 DANIEL D'OYLEY—On the Vesiculae Seminales.
 DANIEL NEWCOMB—On Conception.
 JOHN HART—On Sensation and Motion.
 SAMUEL MATTHEWS—On the Effects of Music in Diseases.
 ROBERT M. CUNNINGHAM—On the Bilious Fever in the Vicinity of Lancaster (Pennsylvania), in 1804.
 WILLIAM F. SELBY—On the Analogy between Plants and Animals.
 SAMUEL TUCKER—Subject unknown.

Medical Society of South-Carolina.

Officers for the year 1805.

Doctor JAMES MOULTRIE, President.
 PHILIP G. PRIOLEAU, Vice-President.
 FREDERICK DALCHO, Secretary.
 JOHN P. GOUGH, Treasurer.

Dr. Dalcho is appointed to deliver the oration at the next anniversary.

Officers for the year 1806.

Doctor PHILIP G. PRIOLEAU, President.
 JOSEPH JOHNSON, Vice-President.
 JOHN P. GOUGH, Treasurer.
 FREDERICK DALCHO, Secretary.

The anniversary oration was delivered by Dr. DALCHO. Dr. HALL was appointed to deliver the oration the ensuing year.

Medical Intelligence and Books from Spain.

Ever since the late appearance of pestilential epidemics in the south of Europe, we have used our best endeavours to obtain such accounts of their origin and character as we might present to our readers with the requisite evidence of authenticity and correctness. From the state of medical science in Spain, it seems to have been supposed that little was likely to be written by their physicians on this subject.

But in this we have been agreeably disappointed. Several respectable Spanish physicians have lately transmitted to us their publications on yellow fever, as it appeared among them, which sufficiently prove that medicine finds many learned and industrious cultivators in that part of Europe.

For the conveyance of these books to us, and for the favour of presenting many other interesting Spanish publications, on different medical subjects, we are obliged to Dr. FELIX PASCALIS, an eminent physician, late of Philadelphia, and formerly a distinguished member of the Board of Health of that city, who has recently removed, and is now settled in New-York. This gentleman, who lately made a tour through many parts of Spain, has taken particular pains to inquire into every fact concerning the appearance and character of the yellow fever, as it has been observed, within a few years past, in the cities of that kingdom. That he has performed this task with great discernment and ability, is sufficiently evinced by his interesting communication on that subject in the present number.

Of the late Spanish publications on the yellow fever which we have received, the following are the most interesting:—

1. *Observaciones Justificadas y Decisivas sobre que la Fiebre Amarilla pierde dentro de una choza toda su fuerza contagiente, y sobre que se preveve tambien y se cura, de un modo hasta ahora infalible, con la Quina, &c. &c.* Por Don Tadeo Lafuente, *Medico Consultor en jefe de los Reales Ejercitos, &c. &c. &c.* Año de 1805.

2. *Disertacion Medica sobre la Calentura Maligna Contagiosa que reyno en Cadiz, el año de 1800: Medios mas adecuados para preservarse de ella, y de otras enfermedades contagiosas y pestilenciales.* Por el Dr. D. Pedro Maria Gonzalez, *Ayudante de Cirujano Mayor de la Real Armada, &c.*

3. *Reflexiones sobre las Causas de extenderse el contagio de la Fiebre Amarilla en la Península, y medios de extinguirlo; escritas y mandadas publicar en Granada à 1.º de Diciembre, de 1804, Por el Excmo. Sr. D. Tomas de Morla, Gran Cruz de Carlos III, Consejero de Estado, Capitan General de esta Provincia, Presidente de la Real Chancillería, y de las Juntas de Sanidad de ella, &c. &c. &c.*

4. *Discurso sobre el Carácter, y Curacion Práctica de la Fiebre Amarilla. Compuesto por un Profesor de Medicina de la Ciudad de Cádiz.* Lo da á luz el Dr. D. Vicente Terro, *Exáminador Sinodal del Arzobispado de Sevilla, y*

Obispados de Málaga y Ceuta, Cura Rector de las Iglesias de la Ciudad de Algeciras, y Párroco Castrense de la misma.

5. *De la Preservacion, Conocimiento y Curacion de la Fiebre Amarilla. Representacion hecha al Excentísimo Señor D. Francisco Xavier de Castaños, Teniente General de los Reales Exercitos, Comandante del Campo de Gibraltar, &c. &c. &c. Por D. Tadeo Lafuente, Medico Consultor, &c.*

6. *Entretenimiento Fisico-Medico con los Profesores de ambas Facultades, de un Convaleciente en la Epidemia de Cadiz. Para las Precauciones en la Recurrencia de otra Analoga Combinacion Meteorologica. Octubre, 1800.*

7. *Medios Propuestos por D. Joseph Queraltó, Fisico de Cámara de S. M. Director de la Real Junta de la Facultad reunida, Director General por S. M. de la Epidemia que ha reynado, &c. Para que el Pueblo sepa desinfeccionar y pre-
caverte vuelva á reproducir la que le ha consternado.*

8. *Dictamen del Excmo. Señor Conde de Teba, que como Vocal de la Junta de Sanidad de Granada presentó en ella: mandado por la misma extender en sus Actas, y que como su proprio parecer se remitiese al Excentísimo Señor Capitan General, y Presidente de esta Chancillería, en seis de Noviembre, de 1804.*

9. *Respuesta dada por el Doctor Don Francisco Xavier de Balmis, Fisico de Camara de S. M. Honorario, con motivo de haber sido preguntado por D. J. de O. Oficial retirado en Cadiz, sobre algunas particularidades de la presente Epidemia, y publica un amigo de la humanidad; sacada de los Diarios de Madrid del Viernes y Sábado 10 y 11 de Octubre, de 1800.*

10. *Nouveaux Eclaircissements sur les Causes des Maladies Pestilentielles: suivis de Reflections sur celle de Cadix de 1800; sur les divers traitemens qui furent employés contre elle, et les précautions qu'elle obligea à prendre. Par Joseph-Antoine Villalba et Rodero, de Cadix, Medecin Espagnol, Licencié en Chirurgie-Medicalé, &c.*

APPENDIX.

Dr. MITCHILL's Speech on Quarantines, delivered in the House of Representatives of the United States, February 15, 1803.*

THE house, according to the order of the day, resolved itself into a committee of the whole house on the report of Mr. John C. Smith, in behalf of the committee of claims of the 27th of January, to whom was referred a petition of the Mayor and Commonalty of the town of Alexandria, in the district of Columbia, Mr. Varnum in the chair, and the following proposition was read, to wit:

Resolved, That provision ought to be made, by law, for the regulation of quarantine within the district of Columbia.

Dr. MITCHILL expressed his satisfaction, that this subject, so interwoven with commerce and police, was, at length, brought before the house. Under a conviction of its magnitude and importance, he had made a motion, during the last session of Congress, for a committee to be appointed, expressly for the purpose of revising the existing law on the subject, and of proposing something more pointed and explicit in addition to it. Such a committee had been appointed; but owing to the press of business at that time, and to some difficulties in framing a proper bill, there had never been any thing reported to the house. The subject had thus been passed over without having been acted upon, and this was to him a matter of much regret.

The present statute† respecting quarantines and health laws, was passed about four years ago. Public opinion was at that period much more divided about the proper kind of regulations to be adopted than it was at present; but now the nation had the additional experience of all the time since the year 1799 to form more just ideas on these restraints upon navigation and trade. They were so odious and oppressive, and so much more rigorous than either prudence or safety required, that it was highly desirable to amend the whole system. Under the power given by the consti-

* The reader will find much on this subject in the memoir on Lazarettoes, in Med. Rep. Hex. i. vol. v. p. 243, and in the report on quarantines in vol. vi. p. 460, as well as in our present volume, p. 224.

† This act was passed by Congress, February 25, 1799, and may be seen in Med. Rep. Hex. i. vol. ii. p. 463.

tution to regulate commerce with foreign nations, and to provide for the general welfare, it belonged to Congress to do it, and the present was a fair and excellent opportunity.

Gentlemen might ask, why the law now in force would not answer all the purposes? He would inform them;—the principle of that law was wrong. Instead of preserving one general rule of quarantine throughout our whole territory, and making that rule binding upon all the citizens of the United States, that law waves the consideration of the question altogether, and refers the legislation thereof to the governments of the respective States. “The quarantines, and other restraints which shall be *required and established by the health laws of any State, or pursuant thereto*, respecting any vessels arriving in, or bound to any port or district thereof, whether from a foreign port or place, or from another district of the United States, shall be duly observed by the Collectors, and all other officers of the revenue of the United States.” In the same section it is afterwards declared, that not only the officers of the Custom-houses, but the masters and crews of the several revenue cutters, and the military officers who shall command any fort or station on the sea coast, shall be governed by such health laws as the States in which they are doing service shall respectively enact. This was an expeditious way of doing business, but he questioned very much the propriety of it. Congress had delegated a portion of its power to the States, in a way so diffusive and general, that they might proceed under this broad permission to frame regulations almost as they pleased. Accordingly, in New-York there existed one kind of restraint; in Massachusetts a different one; in Pennsylvania another code of rules had been adopted; in Maryland the regulations varied materially; while in Virginia quarantines were governed by yet other forms; nor were they more harmonious in the other States. The utmost irregularity prevailed. No uniform mode could be carried into operation. Although in the novelty of our situation, when the present plan was adopted, there were strong reasons for leaving the management of all the details of quarantines to the individual States, yet he did not believe, at the present time, that delegation of the legislative power was any longer necessary. We were now sufficiently acquainted with the history, nature, and operation of these impositions upon commerce, to estimate their exact value, and to direct certain uniform proceedings in regard to them.

Mr. Mitchill declared his full conviction, by all the information he could collect from the history of navigation, from an examination of ships and vessels, and from information, concerning their crews, passengers, stores, and cargoes, that the mischief intended to be guarded against by a detention of forty days, or any longer or shorter term of time, was locally engendered on board the vessel, from corruption, filth, and uncleanness. The foulest vessels were the most sickly; and where human effluvia, and vapours from other corrupting animal substances were extricated, and confined in the hold and between the decks, fevers almost invariably broke out, and raged with more or less violence. He should not go back to the early attempts of circumnavigation and discovery, to prove this inbred source of mortality; he would only call to the recollection of the house the immense destruction of human life in transporting slaves from Africa, emigrants from Germany and Ireland, and soldiers from every part of Europe to the western world. The wretched victims fell like hecatombs, immolated to *pestilence*. And then, commonly and absurdly enough, the blame was thrown on foreign climates, and particularly tropical latitudes.

Nor was there any great difficulty in comprehending by what means this pestilential condition of ships was produced. By a chemical process going on among the particles of the perspired, exhaled, and excreted discharges of human bodies, were these several accumulated products changed to pestilential matter. This conversion was accelerated by the moderate degree of heat which generally existed within the holds of vessels in all temperate latitudes. The points of the thermometer, between which the fermentative and putrefactive alterations took place, had been ascertained by chemists to be from the 50° to the 120° of Fahrenheit's scale. In this wide range it had been computed, that between the 44° and 55° , the decomposition of juicy vegetables would go on; between the 55° and 66° , the saccharine and spirituous fermentation would be promoted, and the acetous process take place between the 75° and 88° . Animal matter had been found to turn to corruption, and to assume new forms and qualities in all the temperatures warmer than 55° .

The summer temperature of the ocean water in the harbour of New-York had been found (said Dr. M. by his own experiments) to be 74° . He had even known it at ebb tide to be 75° , and at low water 76° . The heat of the Gulf Stream, almost as far north as the grand banks of Newfound-

land, was as high as 72° . In latitudes nearer the equator, the heat of sea-water was proportionally greater. And as the heat of a vessel's hold was about the same with the warmth of the water in which she floated, it could be easily understood what sort or degree of fermentative or putrefactive action would be excited within a vessel sailing from the cool oceanic temperature of the northern latitudes, amidst the more plentiful diffusion of caloric, through the equatorial seas, and more especially in the gulf of Mexico. There was heat enough to promote all the disorganizing processes in vegetable and animal substances, and to cause an extrication of noxious effluvia from them; especially in the tainted and putrefying beef, fish, hides, and pork, which constituted so large a part of their cargoes.

In such a condition of a vessel, crew, and cargo, there seemed to be no mystery in deciding what ought to be done. The unclean persons and things should be kept apart from the society of the pure and uncontaminated portion of the human species, until they were aired, washed, and cleansed. Until this was done, there ought to be a prohibition of intercourse. But this forbiddance should not be an idle and pernicious demurrage of a vessel at anchor, or of her people in a pest-house, but should be an active and efficacious process of cleanliness, immediately entered upon, and diligently carried into operation. Thus, a nasty and infectious vessel, and her hands, might be rendered sweet and comfortable in nearly the same time that an unclean and pestilential house required to make it safe and healthy; and he would add, by the same well-known means and agents which are universally employed in domestic economy, to wit, alkaline lotions, and not acid fumigations. Where it was improper on ship-board, from any cause, to introduce moisture, great benefit had been derived from *dry-scouring*, or scrubbing the decks with square blocks of wood and exsiccated sand. Experience had proved this to be an excellent practice.

Ships were known to grow foul more rapidly than any other mansions of men, or receptacles of produce. There was, from their structure, considerable difficulty in applying the detergent materials to every part. Experience had also shown, that the requisite time, labour, and expense, were greater than either navigators, freighters, or owners chose to encumber themselves with. If a ship was sea-worthy at the Insurance-office, her internal condition as to health, though

a painted sepulchre, was a secondary object. And as it was now sufficiently understood, that individual care and vigilance could not be fully relied on to keep ships in a clean and wholesome condition, there was a necessity to provide by public authority, not only that the mischief so engendered on ship-board should not be brought into our own ports and cities, but should be so effectually destroyed as not to be conveyed in the vehicle that bred it, to any other harbour or place. It was very uncourteous and uncivil, to say the least of it, to send a pestilential ship into the ports of our neighbours; yet nothing was more common than to permit ships which were judged too foul to enter the port of our actual residence, to sail without impediment to another port in our own country or any foreign place. Mr. Mitchill declared he had known many instances of this, and had traced a number of them from one harbour to another. Such a pestilential ship, performing a series of voyages, had given an evil report to various healthy places in succession. For as the present mode of considering the subject attaches blame not to the ship, but to the place whence she last came, such a vessel, reeking with inbred pestilence and venom, would, in the existing state of public opinion, excite jealousies and suspicion between a dozen or a score of uninfected sea-ports. The whole object, in short, was, to render a foul ship and her appurtenances clean, instead of detaining her a month or more at quarantine, and dismissing her afterwards in a worse condition than that of her arrival. Mr. M. said, he was well assured that this part of the work, the most valuable and efficient part of it too, was exceedingly neglected in our own ports as well as in those of Europe. And he predicted this would ever be the case as long as "corn, grain, legumes, and all kinds of salted provisions were, according to the quarantine code of Marseilles, deemed unsusceptible of contagion. For from the corruption of these very things, it was now perfectly well known that pestilential and fever-producing gases were evolved." Vessels were suffered to obtain clearances, and to sail, without having undergone any thing that deserved the name of a purification. It was the duty of the government to prescribe and enforce an adequate system of ship-cleaning in all the ports of the nation. By due attention to this plain object, our commerce would be delivered from the greater part of the expensive and vexatious restraints under which it labours, and a noble and instructive example be given by us to the whole

civilized world. One radical error would be removed by it, which was the ascribing inbred and ship-manufactured dis tempers to the port whence the vessel last sailed, though that port was wholly innocent.

It was now a favourable opportunity to extend such beneficial regulations to all the ports of entry in the United States. He hoped the house would be willing to go the whole length of the business, and decline all half-way expedients. As a friend to the trade and revenue of the nation, as a well-wisher to the steady and uninterrupted course of business in our sea-ports, as the immediate representative of one of the most important seats of our commerce,* and as the admirer of science, when applied to meliorate the condition of man, he hoped that some general provisions might forthwith be made. If, however, it should seem to the gentlemen too soon for Congress to declare absolutely what ought to be done throughout all the States, and too bold for them to mingle in the strife and warfare of sentiment on this perplexing question, there was still an excellent occasion at the present juncture to begin the reform in the territory of Columbia, over which Congress possessed exclusive jurisdiction, and wherein there would be no danger of invading the peculiar modes of thinking and acting in the respective States.

The territory of Columbia was precisely such a spot as could be wished, for the purpose of a luminous and benevolent innovation. Here Congress might legislate without exciting the murmurs, or alarming the fears of the individual States. An excellent example might be afforded to all their governments; and, he would add, to the maritime governments of the globe. Here they might view the abolition of quarantine, and the substitution of a prompt, wholesome, and energetic purification in lieu of it. Alexandria might enjoy the satisfaction and honour of setting the noble precedent to all other cities.

But why had commerce, from a remote time, been burdened with a restraint extending to forty days? Was there any advantage gained by adopting *that exact term* in preference to a greater or a less portion of time? He believed there was no advantage in adopting that precise period. The length of it had been regulated, he supposed, by the same reasons, whatever they were, which had introduced the term of forty days so often into legislative proceedings and

* The city of New-York.

the books of law. It would seem as if our forefathers thought there was something almost magical and uncommonly powerful in the *forty day limit*. He would mention a few examples of the fondness for this number of days. By the common law of England, if a debt due to the crown was not paid within *forty* days, the distress caused for the same might be sold. The baron and county courts were allowed to try causes to the amount of *forty* shillings. The forest court called the "wood mote," was to be held before the verderors once in every *forty* days. So when the court of justice-seat was to be held, *forty* days notice ought to be given of its triennial sitting. The constitution of parliament, as it now stands, was marked in king John's time, A. D. 1215, when that prince, among other stipulations, promised to summon tenants in chief of the crown to meet at a certain place to assess aids and scutages, with *forty* days notice. The writ out of the chancery for summoning parliament by advice of the privy council must be issued at least *forty* days before it begins to sit. A commoner of parliament enjoys his privilege of person for *forty* days after each prorogation, and *forty* days before the next meeting. He said he could easily mention as many more examples of attachment to this remarkable term. Thus "forty" had become a fashionable number, and it was very natural for legislators, who had incorporated *forty* into so many judicial and municipal regulations, to introduce it into those which laid restraints on commerce, so far as to permit the importation of goods and merchandize from foreign parts, but, at the same time, to prohibit the introduction of their diseases. Thus the adoption of this period of a month and one third arose from mere imitation, and not from the reason or propriety of the thing; that being the fact, it ought to be abolished, as burdensome without use, and as pompous without benefit.

Under these circumstances, to insist upon a quarantine in the full and rigid sense of the term, was intolerably burdensome. If it was a mere detention without purification, the time was not near long enough; for he thought, as an unclean vessel would not grow cleaner by delay, she ought never to be admitted to port in that pestilential condition. This was a point of importance at all times of the year, and required observance as well in winter as summer. It was highly necessary to purify ships in winter if they were intended to be clean in the hot season: for the heats of

August and September acting upon the accumulated nuisance of the preceding six months, pestilence might be expected to arise. On the other hand, if the means of purification were promptly and vigorously employed, the full period was ridiculously tedious. All that he saw in the business might be summed up in one sentence, *Clean your ships by public authority as often as they grow nasty; perform this operation by the same means and agents by which houses are purified; apply the same methods to all unclean persons, clothes and bedding; and never suffer a foul vessel to go to sea, any more than to enter a port, until she has been aired, washed, and alkalinized.* If she goes to sea in an unclean condition, she will be yet more foul at the time and place of her arrival, more especially if she proceeds from a cool tract of ocean to a warm one. The construction of ships was such, he knew, as made their holds, their sides, and many parts of their interior, difficult to be cleansed properly. Hence, many of them grew venomous, and the septic exhalations evolved from nastiness accumulated within them, infected crew after crew. This evil impressed his mind so strongly, that if any part of a vessel was now inaccessible by reason of its structure, he recommended that naval architects should be applied to for a removal of the difficulty, by such a disposition of the uprights, flooring, and limbers as would allow both atmospheric air and alkalinized water to pass freely over the whole internal surface. And alkalinized water could be procured in a most cheap and easy manner, by subjecting common wood-ashes to lixiviation in the way practised at the manufactories of pot-ash. A row of letch-tubs ought to be fitted up near the place where ships are unloaded and purified; and thus a constant and copious supply of ley would be kept ready for use. Every health establishment should be furnished with such an apparatus, as they are very incomplete without it.* Upon this plan he was bold to declare that fumigations would be superfluous; and upon every other, those fashionable and boasted practices were deceitful and nugatory. Dr. Mitchill concluded his observations by expressing his hope, that something might be done on this side of the Atlantic to break the enchantment by which the nations of Europe had been bound for almost an hundred years.

* For the explanation of this, see Med. Repos. Hex. i. vol. v. p. 191 & seq.

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END OF VOL. III. HEX. II.

1

ERRATA.

Page 145, line 34, for "preventative," read *preventive*.
 245, 6, for "baths," read *cloths*.
 251, 23, for "one," read *our*.
 379, 16, for "destructive," read *distinctive*.